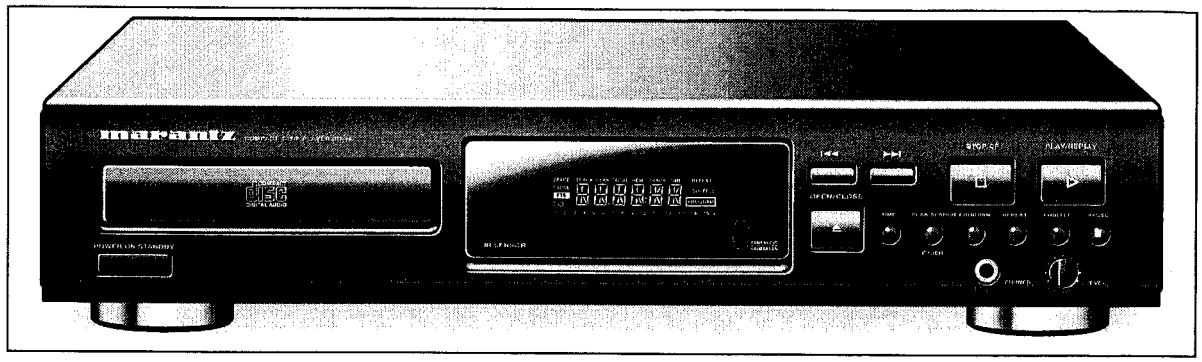
# Service Manual

## 74CD36/01B/02B/05B/07B
## 74CD46/01B/02B/05B/07B
## CD-46F B/U BL
## Compact disc player



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marantz®

# model CD36 - CD46


PCS 60 970

First issue 1995

4822 725 25234

# MARANTZ DESIGN AND SERVICE

Using superior design and selected high grade components, MARANTZ company has created the ultimate in stereo sound. Only **original MARANTZ parts** can insure that your MARANTZ product will continue to perform to the specifications for which it is famous.

Parts for your MARANTZ equipment are generally available at our National Marantz Subsidiary or Agent.


MARANTZ EUROPE B.V.
P.O. Box 80002
Building SFF 2
5600 JB Eindhoven
The Netherlands
Phone : +31-40-732241
Fax : +31-40-735578


## ORDERING PARTS

Parts can be ordered either by mail or by telex. In both cases, the correct part number has to be specified. The following information must be supplied to eliminate delays in processing your order:

1. Complete address
2. Complete part numbers and quantities required
3. Description of parts
4. Model number for which the part is required
5. Way of shipment
6. Signature: any order form or telex must be signed, otherwise such part order will be considered as null and void.

## ADDRESSES

**AUSTRALIA**
MARANTZ AUSTRALIA
Figtree Driver
Australia Centre
Homebush, N.S.W., 2140
Australia

**BELGIUM**
MARANTZ EUROPE B.V.
P.O. Box 80002
Building SFF 2
5600 JB Eindhoven
The Netherlands

**FRANCE**
MARANTZ FRANCE
4 Rue Bernard Palissy
92600 Asnières
France

**GERMANY**
MARANTZ DEUTSCHLAND
Postfach 3129
49021 Osnabrück
Hakenbusch 3
49078 Osnabrück
Germany

**GREECE**
ADAMCO ELECTR.SA
P.O.Box 21025
Hippocratus Str. 188
Athens 11471
Greece

**ITALY**
Marantz Italy SPA
Piazza IV Novembre, 3
20124 Milano
Italy

**JAPAN**
Marantz Japan Inc.
35-1 SagamiOhno 7-Chome
Sagamihara City,
Kanagawa 228
Japan

**KUWAIT**
Al Alamiah Electronics
P.O.Box 8196
Salmiah
22052 Kuwait

**NETHERLANDS**
MARANTZ EUROPE B.V.
P.O.Box 80002
Building SFF 2
5600 JB Eindhoven
The Netherlands

**PORTUGAL**
COREL
Av. da Liberdade
211-2 Esq.
1250 Lisboa
Portugal

**SAUDI ARABIA**
Al Alamiah Electronics
P.O.Box 5954
University Street
Riyadh 11432
Saudi Arabia

**SPAIN**
PHILIPS IBERICA S.A.
Martinez Villergas 2
Apartado 2065
Madrid 28027
Spain

**SWITZERLAND**
MARANTZ SWITZERLAND
Postfach 8010
Zürich-Müllingen
Switzerland

**TRADING**
MARANTZ TRADING
P.O.Box 80002
Building SFF 2
5600 JB Eindhoven
The Netherlands

**U.K.**
MARANTZ HiFi U.K. Ltd.
Kingsbridge House
Padbury Oaks
575-583 Bath Road
Middlesex UB7 OEH
U.K.

**U.S.A.**
MARANTZ AMERICA INC.
440, Medinah Road
Roselle, Illinois 60172
U.S.A.

**All of the above locations are fully equipped to take care of your total service needs or can advice you. Because various countries have differing configuration requirements, it is necessary that you contact the service facility in your particular country. In the event that there is no service location listed for your country, please contact the nearest facility for the necessary assistance.**

In case of difficulties, do not hesitate to contact the Technical Department at above mentioned address.

## TECHNICAL SPECIFICATIONS

**General**

| | | |
|---|---|---|
| 1.Mains voltage | /01B | : 110-127V/220-240V |
| | /02B | : 220V-230V |
| | /04B(F B) | : 100V |
| | /05B | : 230-240V |
| | /06B(U BL) | : 120V |
| | /07B | : 230-240V |
| 2.Mains frequency | | : 50-60 Hz |
| 3.Mains voltage selection only /01B | | : Voltage selector 2 positions |
| 4.Power consumption mains | standby | : < 3W |
| | operated | : < 10W |

**Remote Control**

Internal: RC5

**Line output**

| | | |
|---|---|---|
| 1.Number of channels | | : 2 |
| 2.Output voltage | | : 2 Vrms ± 3 dB |
| 3.Unbalance left-right | | : max. 1 dB |
| 4.Output resistance | | : 1 kΩ |
| 5.Frequency response from 20 Hz to 20 kHz | | : typ. ± 0.3 dB |
| | | : max. ± 0.6 dB |
| | | : with de-emphasis ± 2 dB |
| 6.Phase non-linearity | from 20 Hz to 16 kHz | : max. 7.0° |
| | from 16 kHz to 20 kHz | : max. 32° |
| 7.Out-band attenuation | | : min. 35 dB above 40 kHz |
| 8.Signal to noise ratio | from 20 Hz to 20 kHz | : typ. 95 dB(min. 90 dB) |
| | with digital silence | : typ. 110 dB (min. 100 dB) |
| | A-weighted | : typ. 98 dB |
| 9.Dynamic range (-60 dB) | 1 kHz | : typ. -94 dB(min. -90 dB) |
| | from 20 Hz to 20 kHz | : min. -85 dB |
| 10.Total harmonic distortion + noise | | |
| | 1 kHz | : typ. -85 dB(min. -78 dB) |
| | from 20 Hz to 20 kHz | : min. -75 dB |
| 11.Channel separation | 1 kHz | : typ. 95 dB(min. 86 dB) |
| | from 20 Hz to 20 kHz | : min. 82 dB |
| | with digital silence detection | : typ. 110 dB(min. 100 dB) |
| 12.Automatic switched deemphasis with time constant 15/50 µs | | |

**Variable headphone (CD46 only)**

| | |
|---|---|
| 1.Output voltage | : max. 5 Vrms ± 3 dB |
| 2.Unbalance left-right | : max. ± 1.2 dB |
| 3.Output resistance | : 120 Ω |
| 4.Load impedance range | : 32 Ω to 600 Ω load |
| 5.Output power | : 0 to 30 mW into 30 Ω load |
| | : 0 to 50 mW into 150 Ω load |
| | : 0 to 30 mW into 600 Ω load |
| 6.Signal to noise ratio | : typ. 80 dB (1 kHz) |
| 7.Dynamic range | : min. 70 dB (20 Hz -20 kHz) |
| 8.Total harmonic distortion | : min. 60 dB (20 Hz - 20 kHz) |
| 9.Channel separation | : min. 70 dB (1 kHz) |
| | : min. 65 dB (31.5 Hz - 16 kHz) |

**Dimensions and weight**

| | |
|---|---|
| 1.Apparatus tray closed | : WxDxH 435 x 260 x 90 mm |
| 2.Apparatus tray open | : WxDxH 435 x 405 x 90 mm |
| 3.Weight | : 3 kg |

**Optical read-out system**

| | |
|---|---|
| 1.Laser type | : Semiconductor AlGaAs |
| 2.Wavelength | : 780 nm ± 20 nm |
| 3.Light output (c.w.) | : max. 0.5 mW |

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***WARNINGS***

- Do not expose the equipment to rain or moisture.
- Do not remove the cover from the equipment.
- Do not insert anything into the equipment through the ventilation holes.
- Do not handle the mains lead with wet hands.

***COPYRIGHT***

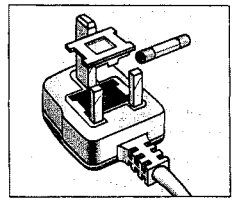
Recording and playback of some material may require permission. For further information refer to the following:
- Copyright Act 1956;
- Dramatic and Musical Performers Act 1958;
- Performers Protection Acts 1963 and 1972;
- Any subsequent statuory enactments and orders.

*Recording is permissible insofar as copyright or other rights of third parties are not infringed.*





## FITTING A MAINS PLUG *(U.K. only)*



This apparatus is fitted with an approved moulded 13 Amp plug. To change a fuse in this type of plug proceed as follows:

- Remove fuse cover and fuse.
- Fix new fuse which should be a BS1362 5A, A.S.T.A. or BSI approved type.
- Refit the fuse cover.

If the fitted plug is not suitable for your socket outlets, it should be cut off and an appropriate plug fitted in its place.

If the mains plug contains a fuse, this should have a value of **5A**. If a plug without a fuse is used, the fuse at the distribution board should not be greater than **5A**.

***NOTE***

*The severed plug must be disposed to avoid a possible shock hazard should it be inserted into a 13A socket elsewhere.*

***HOW TO CONNECT A PLUG***

The wires in the mains lead are coloured in accor dance with the following code:
BLUE – "NEUTRAL" ("N") and BROWN – "LIVE" ("L").
As these colours may not correspond with the colour markings identifying the terminals in your plug, proceed as follows:

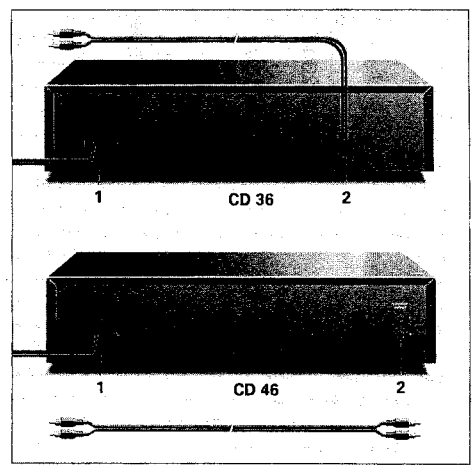
- The BLUE wire must be connected to the terminal which is marked with the letter "N" or coloured BLACK.
- The BROWN wire must be connected to the terminal which is marked with the letter "L" or coloured RED.
- Do *not* connect either wires to the earth terminal in the plug which is marked by the letter "E" or by the safety earth symbol or coloured green or green-and-yellow.

Before replacing the plug cover, make certain that the cordgrip is clamped over the sheath of the lead – not simply over the two wires.

## POWER SUPPLY SETTING

- Check that the type plate at the bottom of your player indicates the correct supply voltage.
- If your mains supply voltage is different, consult your dealer or our Service Organisation.
- *Certain versions of this player are equipped with a voltage selector at the bottom of the player which enables you to set the player to the correct mains voltage yourself.*
  *Position 120 V: for all mains voltages between 110V and 127 V.*
  *Position 230 V: for all mains voltages between 220V and 240 V.*

## CONNECTIONS

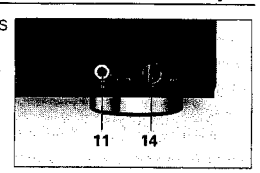


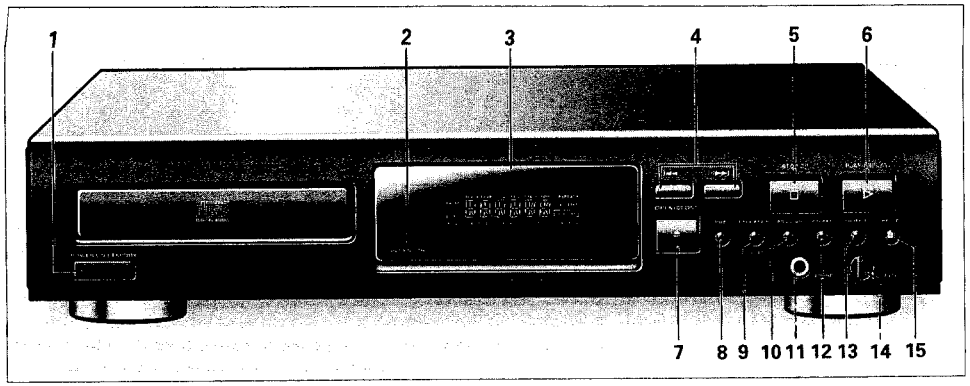

**1 Mains connection**
- Connect the mains lead to your mains supply.

**2 ANALOGUE OUT**
Connecting cable to the amplifier
- Insert a red plug into the 'R' socket and the other plug into the the 'L' socket ***(CD 46 only)***.
- Insert the two other plugs into the corresponding sockets of the CD or AUX input of your amplifier.
  You can also use the TUNER or TAPE IN-connection, but ***never*** the PHONO input!

## CONNECTING HEADPHONES *(CD 46 only)*

- Connect headphones with a 6.3 mm jack plug to the PHONES socket ***11***.
- The sound level is adjusted with the LEVEL control ***14***.






## FRONT OF PLAYER

1 **POWER ON/STANDBY** – Switching on and off.

2 **I**(nfra) **R**(ed) **SENSOR**
Receives the signals from the remote control.

3 **Display** – Informs you about the functioning of the player.

4 ⏮ and ⏭
– Selecting another track.
– Selecting a track to start play with.
– Fast search to a particular passage during play.

5 **STOP/CP**
– Stopping play.
– Erasing a programme (CP = Clear Programme).

6 **PLAY/REPLAY**
– Starting play.
– Returning to the beginning of a track.

7 **OPEN/CLOSE** – Opening and closing the CD compartment. The compartment also closes when the front is pressed briefly.

8 **TIME** – Selecting the time information you want to see.

9 **PEAK SEARCH** – Searching the loudest passage (peak) on a CD or in a programme when making a tape recording.
**FADER** – Fading in and out during play.

10 **PROGRAM**
– Opening the memory when compiling a programme.
– Storing tracks in a programme.

11 **PHONES** ***(CD 46 only)***
Connecting headphones.

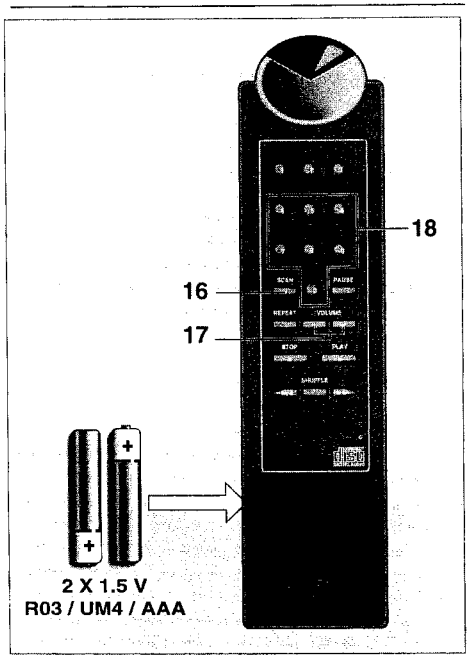
12 **REPEAT** – Repeating play.

13 **SHUFFLE** – Playback in random order.

14 **LEVEL** ***(CD 46 only)*** – Adjusting the volume when listening with headphones.

15 **PAUSE** – Interrupting play.

## REMOTE CONTROL




– The life of the batteries of the remote control is around one year. For replacement only use batteries of the type R03, UM4 or AAA.
– The buttons on the remote control have the same functions as the corresponding ones on the player.
– Extra buttons:

16 **SCAN** – Automatically playing the beginning of each track.

17 **– VOLUME +** – Adjusting the sound level when the player is connected to an amplifier or HiFi system without its own remote control.

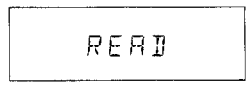
18 **1-0 digit keys**
– Selecting another track.
– Selecting a track to start play with.

## DISPLAY

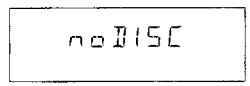
**PAUSE**
Lights up when play is interrupted.
(((O
Lights up when the player receives a command from the remote control.
**TRACK** – Indicates:
– what track is being played;
– the number of tracks on the CD or in a programme.
**PEAK**
– Flashes when the loudest passage (peak) on a CD or in a programme is being searched.
– Lights up when the loudest passage (peak) has been found.
**TRACK TIME**
Indicates the elapsed playing time of the track being played.
**REM**(aining) **TRACK TIME**
Indicates the remaining playing time of the track being played.
**TOTAL REM**(aining) **TIME**
Indicates the remaining playing time of the CD or a programme.
**TOTAL TIME**
Indicates the total playing time of the CD or a programme.
**REPEAT**
Lights up when you repeat a CD or a programme.
**REPEAT 1**
Lights up when you repeat a track.
**SHUFFLE**
Lights up when the tracks are played in random order.
PROGRAM
– Flashes when a programme is being compiled.
– Lights up when a programme has been stored in the player memory.
**1-15 track number indicator**
Shows the number of tracks on the CD.
**+**
Lights up when there are more than 15 tracks on the CD.



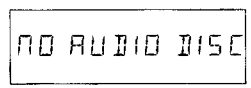
## DISPLAY MESSAGES



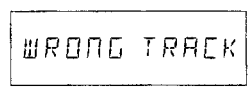

Lights up when the CD's contents list is being scanned.




Lights up when there is no CD in the CD compartment.

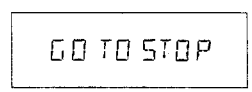



Scrolls on the display when insert a non audio CD (CD-ROM, CD-I or CDV).




Scrolls on the display if you select a non-existent track number.

Scrolls on the display if you try to activate a function for which you must first start play.




Scrolls on the display if you try to activate a function for which you must first stop play.

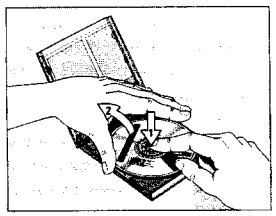
## NORMAL PLAYBACK (PLAY/REPLAY)

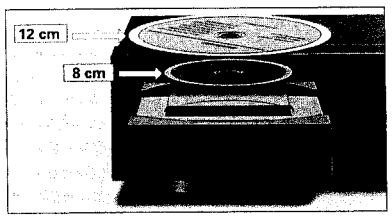
***NOTE!*** *Use only audio CDs; no CD-ROM, CD- I or CDV.*

- *Press POWER ON/STANDBY* ***1*** to switch the player on.
- Open the CD compartment by pressing OPEN/CLOSE ***7***.

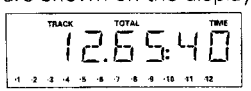
– *OPEN* lights up.

- Insert an audio CD, ***printed side up***, and close the compartment by pressing OPEN/CLOSE ***7***.



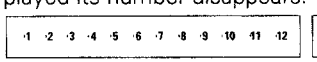


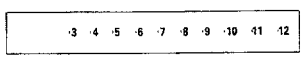

– *CLOSE* lights up, followed by *READ*. The number of tracks and the playing time of the CD are shown on the display.



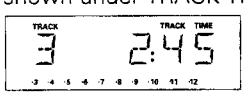

- Press PLAY/REPLAY ***6*** to start play.
  You can also press PLAY/REPLAY immediately after inserting the CD; the compartment then closes automatically.
  You can also close the CD compartment by pressing its front; playback will then start automatically.

– The number indicator shows how many tracks are on the CD; when a track has been played its number disappears.




– The track being played is always shown under TRACK and its elapsed playing time is shown under TRACK TIME.

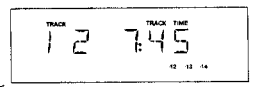



– Play will stop after the last track.

- Press POWER ON/STANDBY ***1*** to switch the player off.

You can interrupt playback by pressing PAUSE ***15*** ; PAUSE then lights up.
Press PLAY/REPLAY ***6*** to restart; if you *first* press PAUSE again and *then* PLAY/REPLAY, the current track starts again from the beginning.
You can also restart play by pressing SCAN ***16*** *(on the remote control)* or SHUFFLE ***13***.
If you press PLAY/REPLAY *during play*, the current track starts again from the beginning.
You can stop playback by pressing STOP/CP ***5*** or OPEN/CLOSE ***7***.

### SELECTING ANOTHER TRACK (|◄◄ ►►|)




- Press ►►| ***4*** or |◄◄ ***4*** *(less than 0.5 seconds)* untill the desired track number appears under TRACK.

– The music stops and a moment later the selected track begins to play.

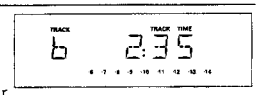
You can also enter the number by using the 1-0 digit keys ***18*** *(on the remote control)*.
Numbers consisting of two figures must be keyed in ***within 2 seconds***.

### SEARCHING FOR A PASSAGE (|◄◄ ►►|)

- Hold |◄◄ ***4*** down to search backwards to the beginning.
- Hold ►►| ***4*** down to search forwards to the end.

The searching speed is determined by how long a key is pressed:
– the first 2 seconds fairly slowly, with sound;
– then at the maximum speed, with no sound.
If you reach the end of the last track and release ►►|, play will resume a few seconds before the end of the CD.

### STARTING WITH A PARTICULAR TRACK (|◄◄ ►►|)




- Press ►►| ***4*** or |◄◄ ***4*** *(less than 0.5 seconds)* untill the desired track number appears under TRACK.
- Press PLAY/REPLAY ***6***.

– Play starts from the selected track.

You can also enter the number by using the 1-0 digit keys ***18*** *(on the remote control)*.
Numbers consisting of two figures must be keyed in ***within 2 seconds***.
In this case you don't have to press PLAY/-REPLAY; play will automatically start from the selected track.

### PLAYING THE CD IN RANDOM ORDER (SHUFFLE)

- Press SHUFFLE ***13*** before or during play.

– If the CD compartment was open, it will now close.

– SHUFFLE lights up and all the tracks are now played in a random order.

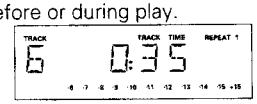
- Press SHUFFLE again if you wish to return to normal play.

If you press |◄◄ ***4***, you will return to a track which has already been played.
If you press ►►| ***4***, you will select any one of the following tracks.
If you press REPEAT ***12***, *twice* the tracks will be repeated in a different order each time, although the first track played will always be the same.

### REPEATING PLAY (REPEAT)

**Repeating a track:**

- Press REPEAT ***12*** before or during play.

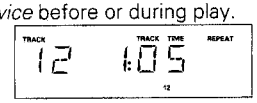



– REPEAT 1 lights up; the track will now be repeated continuously.

- Press REPEAT *twice* to stop the track being repeated.

**Repeating the CD:**

- Press REPEAT ***12*** *twice* before or during play.

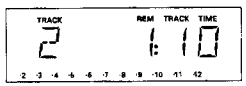



– REPEAT lights up; the CD will now be repeated continuously.

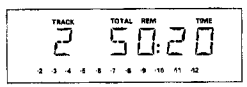
- Press REPEAT again to stop the CD being repeated.

## CALLING UP OTHER TIME INFORMATION (TIME)

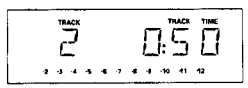
- Press TIME ***8*** whenever you want to know the remaining playing time of the track being played (REM TRACK TIME).




- Press TIME again if you wish to know the remaining playing time of the entire CD (TOTAL REM TIME).



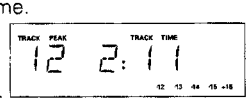

- Press TIME again if you wish to return to the elapsed playing time indication of the current track (TRACK TIME).




## SEARCHING THE LOUDEST PASSAGE (PEAK SEARCH)

- *In STOP mode,* press PEAK SEARCH ***9***.
- PEAK starts flashing and the CD or the programme will now be scanned for the loudest passage (the peak).

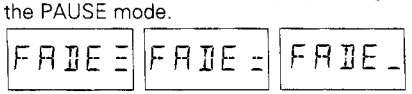
- The display shows the track being scanned and its elapsed playing time.
- When the loudest passage has been found it will be repeated continuously (from 2 seconds before the peak until 2 seconds after the peak)



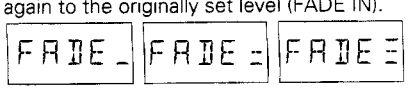

- You can now adjust your recording device.
- You can stop the search by pressing STOP/CP ***5*** or OPEN/CLOSE ***7***; if you press PLAY/REPLAY ***6***, the CD or the programme will be played from the beginning.

## SETTING THE FADE- IN AND FADE-OUT TIME (FADER)

- *During play* press FADER ***9***.
- The sound level will now gradually decrease (FADE OUT), after which the player will go into the PAUSE mode.




- Press FADER again.
- Play continues and the sound level will increase again to the originally set level (FADE IN).

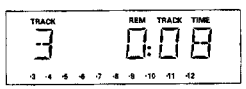



***NOTE!***

*The following functions can only be operated using the remote control.*

## SCANNING A CD (SCAN)

- Press SCAN ***16*** before or during play.
- If the CD compartment was open, it will now close.
- *SCAN* lights up for 2 seconds and the first 10 seconds of each track are played in turn; 10 seconds are counted down each time under REM TRACK TIME.



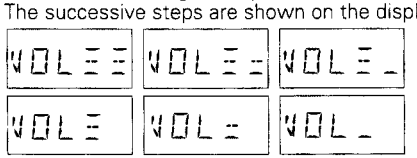

- When the player reaches a track which you wish to hear in full, press SCAN again or PLAY/REPLAY ***6***.

## ADJUSTING THE SOUND LEVEL (– VOLUME +)

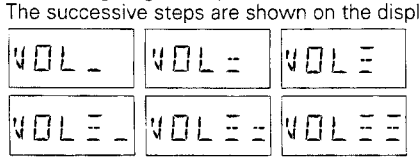
***NOTE!***

- Use the – VOLUME + keys only if the player is connected to an amplifier or HiFi system *without* its own remote control.
- The setting chosen with – VOLUME + will be cancelled when the player is switched off.

- Hold – VOLUME ***17*** pressed down.
- *VOL* lights up; the output signal from the player will now decrease gradually.
- The successive steps are shown on the display.




- Release the key as soon as the required sound level is obtained.
- Hold VOLUME + ***17*** pressed down.
- *VOL* lights up; the output signal will now increase again gradually to the maximum level.
- The successive steps are shown on the display.



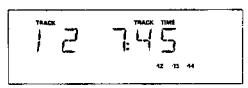

- Release the key as soon as the required sound level is obtained.



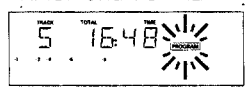
## STORING A PROGRAMME (PROGRAM and ⏮ ⏭)

You can store 30 tracks from each CD in any required sequence in a programme.
*FULL* lights up if you exceed the maximum of 30 tracks.
The 1-0 digit keys ***18*** on the remote control *cannot* be used to select tracks when compiling a programme.

- In STOP mode, press PROGRAM ***10*** to open the memory.
- *PROGR* lights up and PROGRAM starts flashing.
- Press ⏭ or ⏮ ***4*** *(less than 0.5 seconds)* untill the first desired track number appears under TRACK.




- Press PROGRAM ***10*** again.
- The track number has now been stored in the player's memory.
- Select the other track numbers required and store each track by pressing PROGRAM.
- The number of tracks and the playing time of your programme will be shown under TRACK and TOTAL TIME.




- The track number indicator always shows which numbers have been stored.

## PLAYING THE PROGRAMME (PLAY/REPLAY)

- Press PLAY/REPLAY ***6***.
- Playback starts with the first number of the programme.

All keys (except PROGRAM ***10*** and PEAK SEARCH ***9***) can be used during programmed play.
Search for a particular passage is only possible within the track being played.

## ERASING A PROGRAMME (STOP/CP or OPEN/CLOSE)

**During play:**

- Press OPEN/CLOSE ***7*** or STOP/CP ***5*** *(twice).*

**In STOP mode:**

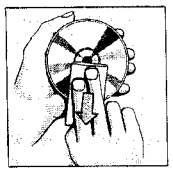
- Press OPEN/CLOSE ***7*** or STOP/CP ***5*** *(once).*

- The programme has now been erased.

## MAINTENANCE

**The CDs**

- Never write on the printed side of a CD.
- *Do not attach any stickers to the CD.*
- Keep the shiny surface of the of the disc clean.
  Use a soft lint-free cloth and always wipe the disc in a straight line from centre to edge.



- Never use cleaning agents for conventional records.
- Detergents or abrasive cleaning agents should not be used either.

**The player**

- A chamois leather slightly moistened with water is sufficient for cleaning the player.
- Do not use cleaning agents containing alcohol, spirits, ammonia or abrasives.

## RECYCLING

Please observe the local regulations regarding the disposal of packing materials, exhausted batteries and old equipment.

1. All redundant packaging material has been omitted. We have done our utmost to make the packaging easy separable into three mono-materials:
   - cardboard (box)
   - expandable polystyrene (buffer)
   - polyethylene (bags, protective foam sheet)
2. Your set consists of materials which can be recycled if disassembled by a specialized company.
3. Do not dispose of exhausted batteries with your household waste.

## TECHNICAL DATA

**Typical Audio Performance**

Frequency range:.....20 Hz - 20 kHz
Amplitude linearity: .....0.3 dB (20 Hz - 20 kHz)
Phase linearity:.....4° (20 Hz - 20 kHz)
Dynamic range: .....90 dB (1kHz)
Signal-to-noise ratio:.....90 dB (1 kHz,)
Channel separation:.....90 dB (1kHz)
Total harmonic distortion:.....0.003% (1kHz)
Audio output level: .....2 Vrms
Impedance PHONES socket ***(CD 46 only)***:
.....30 - 600 ohms

**Power supply**

Mains voltage and frequency:
see the type plate on the rear of the player
Power consumption:.....< 10 W approx.
Safety requirements:.....IEC 65

**Cabinet**

Material/finish:.....metal and polystyrene
Dimensions (w x h x d): .....435 x 90 x 300 mm
Weight:.....4 kg approx.

***Subject to modification***

***This Compact Disc player complies with radio interference requirements as laid down in EC regulations.***





If a fault occurs, run through the points listed below before taking your player for repair.
If the fault remains, try to clear it by switching the player off and on again. If this also fails to help, consult your dealer.
***Under no circumstances should you repair the player yourself as this will invalidate the guarantee!***

| SYMPTOM | POSSIBLE CAUSE | REMEDY |
|---|---|---|
| – Playback of the CD does not start or interruption of playback. | – The CD has been loaded upside down.<br>– No CD inserted.<br>– The CD is badly scratched or dirty.<br>– Moisture condensation on the lens. | • Reload the CD, label side up.<br>• Insert a CD, label side up.<br>• Clean the CD with a soft, lint-free cloth.<br>• Leave the CD player in a warm environment until the moisture evaporates. |
| – Sound skips (at the same part). | – The CD is dirty. | • Clean the CD with a soft, lint-free cloth. |
| – The CD skips tracks. | – The CD is damaged or dirty. | • Replace or clean the CD. |
| – Playback does not start from the first track. | – PROGRAM or SHUFFLE activated. | • Switch off SHUFFLE or clear programme. |
| – No sound or bad sound. | – Loose or wrong connections.<br>– Strong magnetic fields near the CD player. | • Check connections.<br>• Find another place for the unit or change connections. |
| – No sound or bad sound on headphones ***(CD 46 only)***. | – Level control set to – position.<br>– Headphones plug is dirty. | • Set level control<br>• Clean plug. |
| – Remote control does not function. | – Batteries are empty. | • Replace the batteries. |
| – Remote control commands are not properly received. | – The distance between remote control and CD player is larger than 10 metres. | • Reduce the distance between remote control and CD player. |

**(GB) WARNING**

All ICs and many other semi-conductors are susceptible to electrostatic discharges (ESD). Careless handling during repair can reduce life drastically.
When repairing, make sure that you are connected with the same potential as the mass of the set via a wrist wrap with resistance. Keep components and tools also at this potential.

**ESD**

**(NL) WAARSCHUWING**

Alle IC's en vele andere halfgeleiders zijn gevoelig voor electrostatische ontladingen (ESD).
Onzorgvuldig behandelen tijdens reparatie kan de levensduur drastisch doen verminderen. Zorg ervoor dat u tijdens reparatie via een polsband met weerstand verbonden bent met hetzelfde potentiaal als de massa van het apparaat.
Houd componenten en hulpmiddelen ook op ditzelfde potentiaal.

**(F) ATTENTION**

Tous les IC et beaucoup d'autres semi-conducteurs sont sensibles aux décharges statiques (ESD).
Leur longévité pourrait être considérablement écourtée par le fait qu'aucune précaution n'est prise à leur manipulation.
Lors de réparations, s'assurer de bien être relié au même potentiel que la masse de l'appareil et enfiler le bracelet serti d'une résistance de sécurité.
Veiller à ce que les composants ainsi que les outils que l'on utilise soient également à ce potentiel.

**(D) WARNUNG**

Alle ICs und viele andere Halbleiter sind empfindlich gegen elektrostatische Entladungen (ESD).
Unsorgfältige Behandlung bei der Reparatur kann die Lebensdauer drastisch vermindern. Sorgen sie dafür, dass Sie im Reparaturfall über ein Pulsarmband mit Widerstand mit dem Massepotential des Gerätes verbunden sind. halten Sie Bauteile und Hilfsmittel ebenfalls auf diesem Potential.

**(I) AVVERTIMENTO**

Tutti IC e parecchi semi-conduttori sono sensibili alle scariche statiche (ESD).
La loro longevità potrebbe essere fortemente ridatta in caso di non osservazione della più grande cauzione alla loro manipolazione.
Durante le riparazioni occorre quindi essere collegato allo stesso potenziale che quello della massa dell'apparecchio tramite un braccialetto a resistenza.
Assicurarsi che i componenti e anche gli utensili con quali si lavora siano anche a questo potenziale.

**(GB)**

Safety regulations require that the set be restored to its original condition and that parts which are identical with those specified be used.

**(D)**

Bei jeder Reparatur sind die geltenden Sicherheitsvorschriften zu beachten. Der Originalzustand des Geräts darf nicht verändert werden für Reparaturen sind Original-Ersatzteile zu verwenden.

**(NL)**

Veiligheidsbepalingen vereisen, dat het apparaat in zijn oorspronkelijke toestand wordt teruggebracht en dat onderdelen, identiek aan de gespecificeerde worden toegepast.

**(I)**

Le norme di sicurezza esigono che l'apparecchio venga rimesso nelle condizioni originali e che siano utilizzati pezzi di ricambiago identici a quelli specificati.

**(F)**

Les normes de sécurité exigent que l'appareil soit remis à l'état d'origine et que soient utilisées les pièces de rechange identiques à celles spécifiées.

**CAUTION** INVISIBLE LASER RADIATION WHEN OPEN. AVOID EXPOSURE TO BEAM.
**VARO!** AVATTAESSA OLET ALTTIINA NÄKYMÄTTÖMÄLLE LASER SÄTTEILYLLE ÄLÄ KATSO SÄTEESEN.
**VARNING** OSYNLIG LASERSTRÅLNING NÄR DENNA DEL ÄR ÖPPNAD BETRAKTA EJ STRÅLEN.
**ADVERSEL** USYNLIG LASERSTRÅLING VED ÅBNING. UNDGÅ UNSAETTELSE FOR STRÅLING.
**DANGER** INVISIBLE LASER RADIATION WHEN OPEN. AVOID DIRECT EXPOSURE TO BEAM.
**VORSICHT** UNSICHTBARE LASERSTRAHLUNG WENN ABDECKUNG GEÖFFNET. NICHT DEM STRAHL AUSSETZEN.

**SHOCK, FIRE HAZARD SERVICE TEST:**

**CAUTION:** After servicing this appliance and prior to returning to customer, measure the resistance between either primary AC cord connector pins(with unit NOT connected to AC mains and its Power switch ON), and the face or Front Panel of product and controls and chassis bottom.
Any resistance measurement less than 1 Megohms should cause unit to be repaired or corrected before AC power is applied, and verified before return to user/customer.
Ref. UL Standard NO.1492.

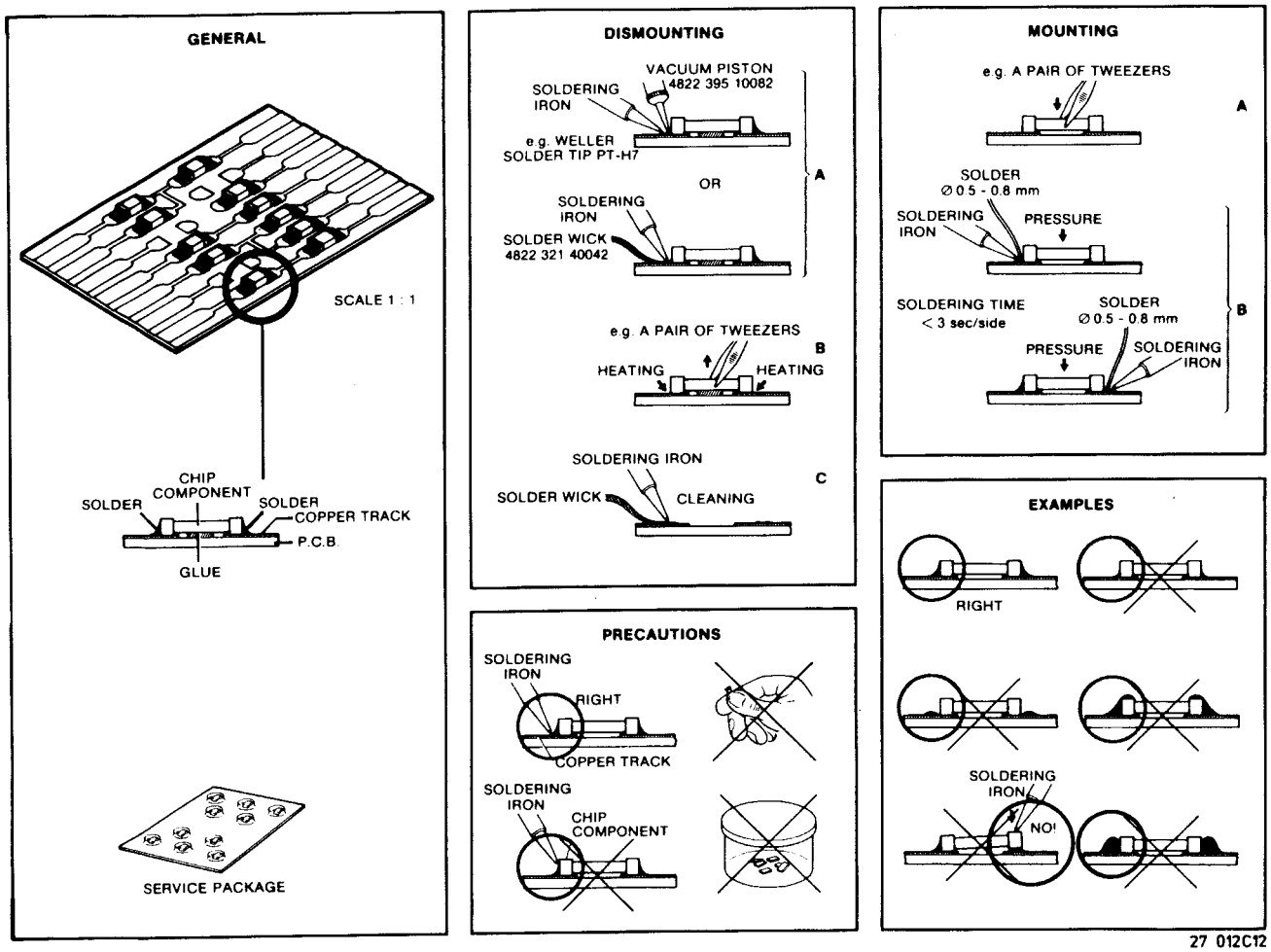
**NOTE ON SAFETY:**

Symbol ⚠ Fire or electrical shock hazard. Only original parts should be used to replace any part marked with symbol ⚠. Any other component substitution(other than original type), may increase risk or fire or electrical shock hazard.

"Pour votre sécurité, ces documents doivent être utilisés par des spécialistes agréés, seuls habilités à réparer votre appareil en panne"

## SERVICING HINTS

In the set chip components have been applied. For disassembly and assembly of chip components see the figure below.



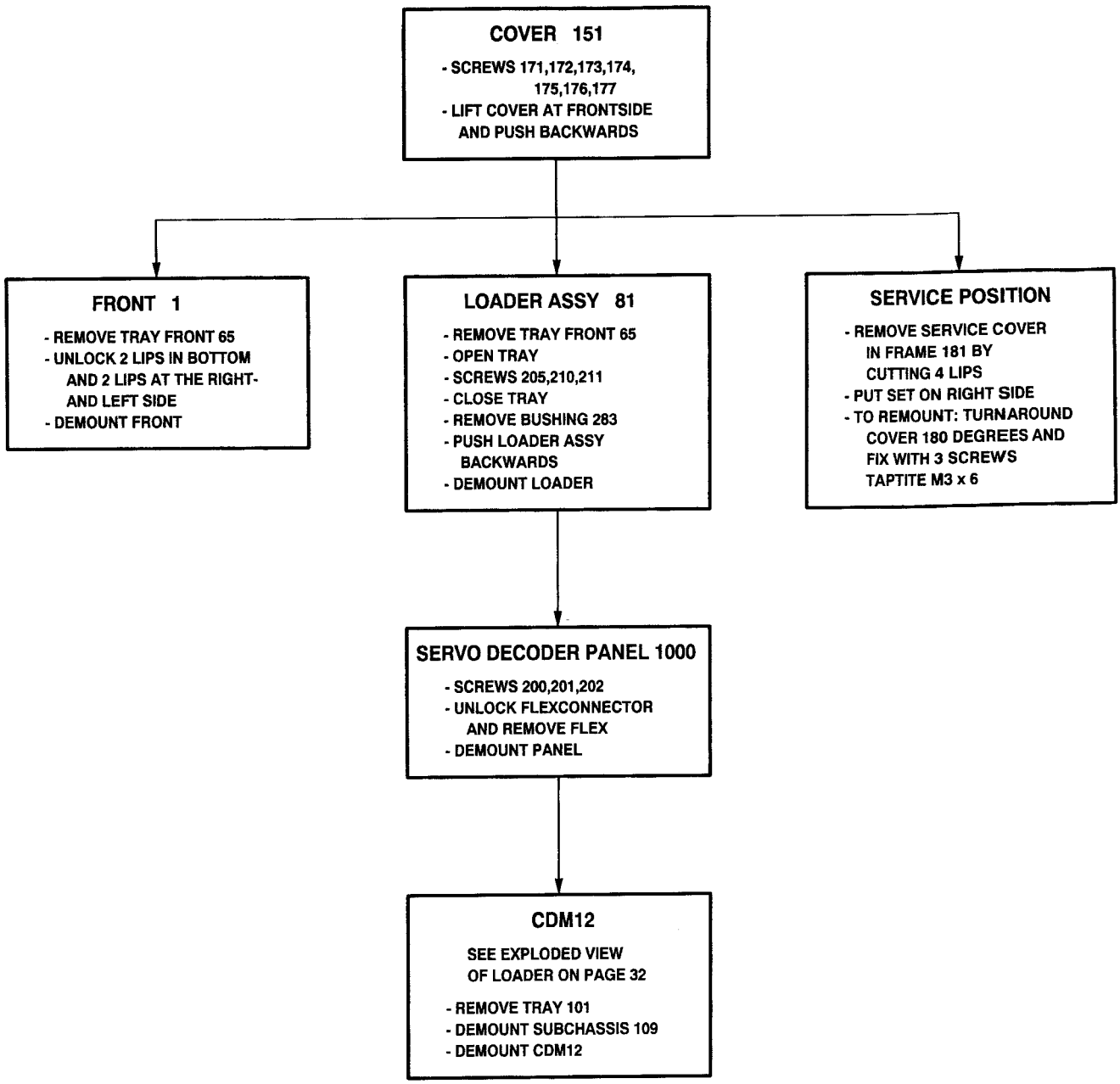

27 012C12

## SERVICE TOOLS

| | |
|---|---|
| Audio signals disc | 4822 397 30184 |
| Disc without errors(SBC444) + | |
| disc with DO errors,black spots and fingerprints(SBC444A) | 4822 397 30245 |
| Disc(65 min 1 kHz) without no pause | 4822 397 30155 |
| Max. diameter disc(58.0 mm) | 4822 397 60141 |
| Torx screwdrivers | |
| Set(straight) | 4822 395 50145 |
| Set(square) | 4822 395 50132 |
| 13th order filter | 4822 395 30204 |

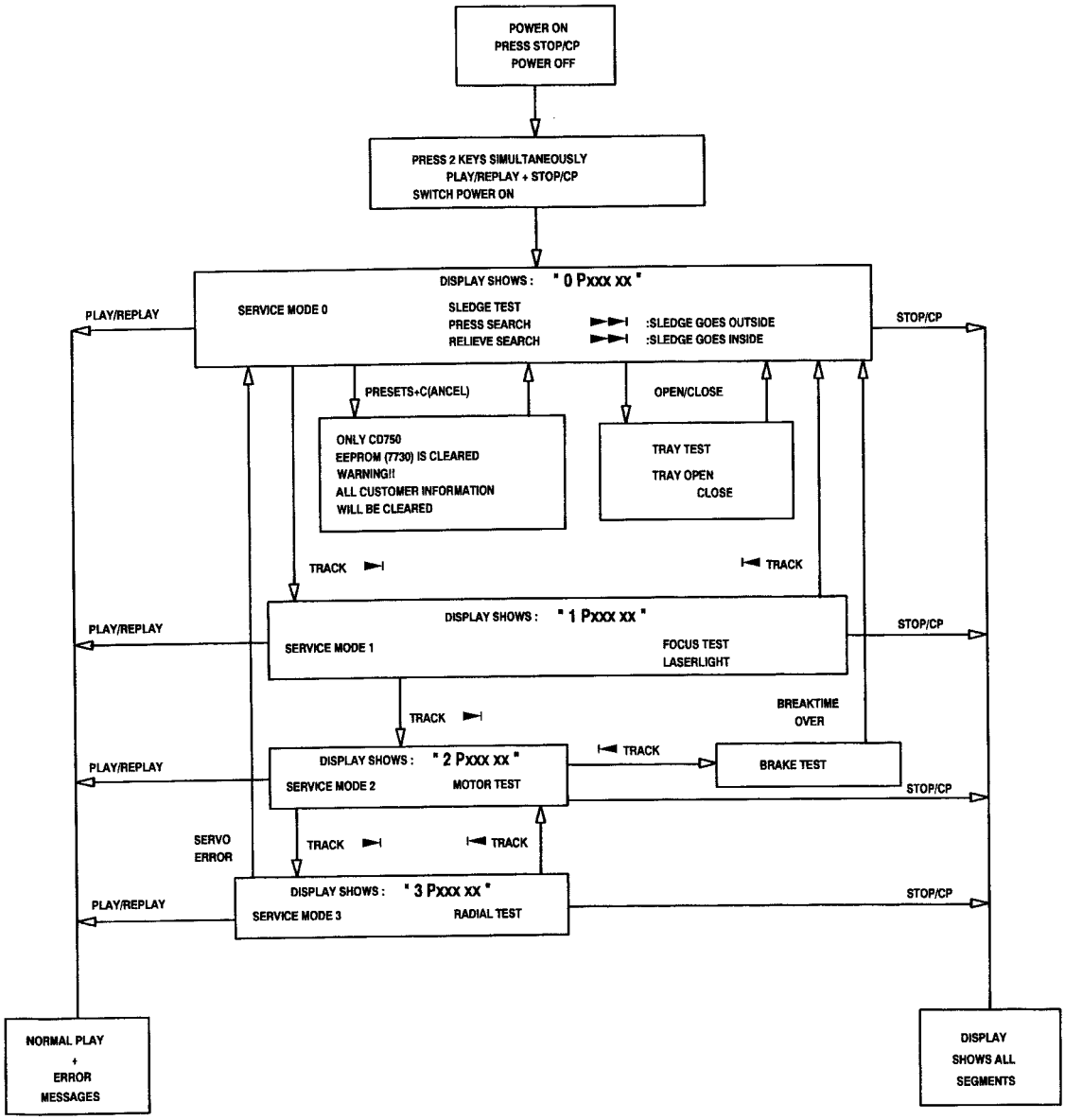
## DISMANTLING INSTRUCTIONS

OPEN EXPLODED VIEW ON PAGE 33


COVER 151
- SCREWS 171,172,173,174, 175,176,177
- LIFT COVER AT FRONTSIDE AND PUSH BACKWARDS
FRONT 1
- REMOVE TRAY FRONT 65
- UNLOCK 2 LIPS IN BOTTOM AND 2 LIPS AT THE RIGHT- AND LEFT SIDE
- DEMOUNT FRONT
LOADER ASSY 81
- REMOVE TRAY FRONT 65
- OPEN TRAY
- SCREWS 205,210,211
- CLOSE TRAY
- REMOVE BUSHING 283
- PUSH LOADER ASSY BACKWARDS
- DEMOUNT LOADER
SERVICE POSITION
- REMOVE SERVICE COVER IN FRAME 181 BY CUTTING 4 LIPS
- PUT SET ON RIGHT SIDE
- TO REMOUNT: TURNAROUND COVER 180 DEGREES AND FIX WITH 3 SCREWS TAPTITE M3 x 6
SERVO DECODER PANEL 1000
- SCREWS 200,201,202
- UNLOCK FLEXCONNECTOR AND REMOVE FLEX
- DEMOUNT PANEL
CDM12
SEE EXPLODED VIEW OF LOADER ON PAGE 32
- REMOVE TRAY 101
- DEMOUNT SUBCHASSIS 109
- DEMOUNT CDM12

HAS1124
9345

## SERVICE TEST PROGRAM



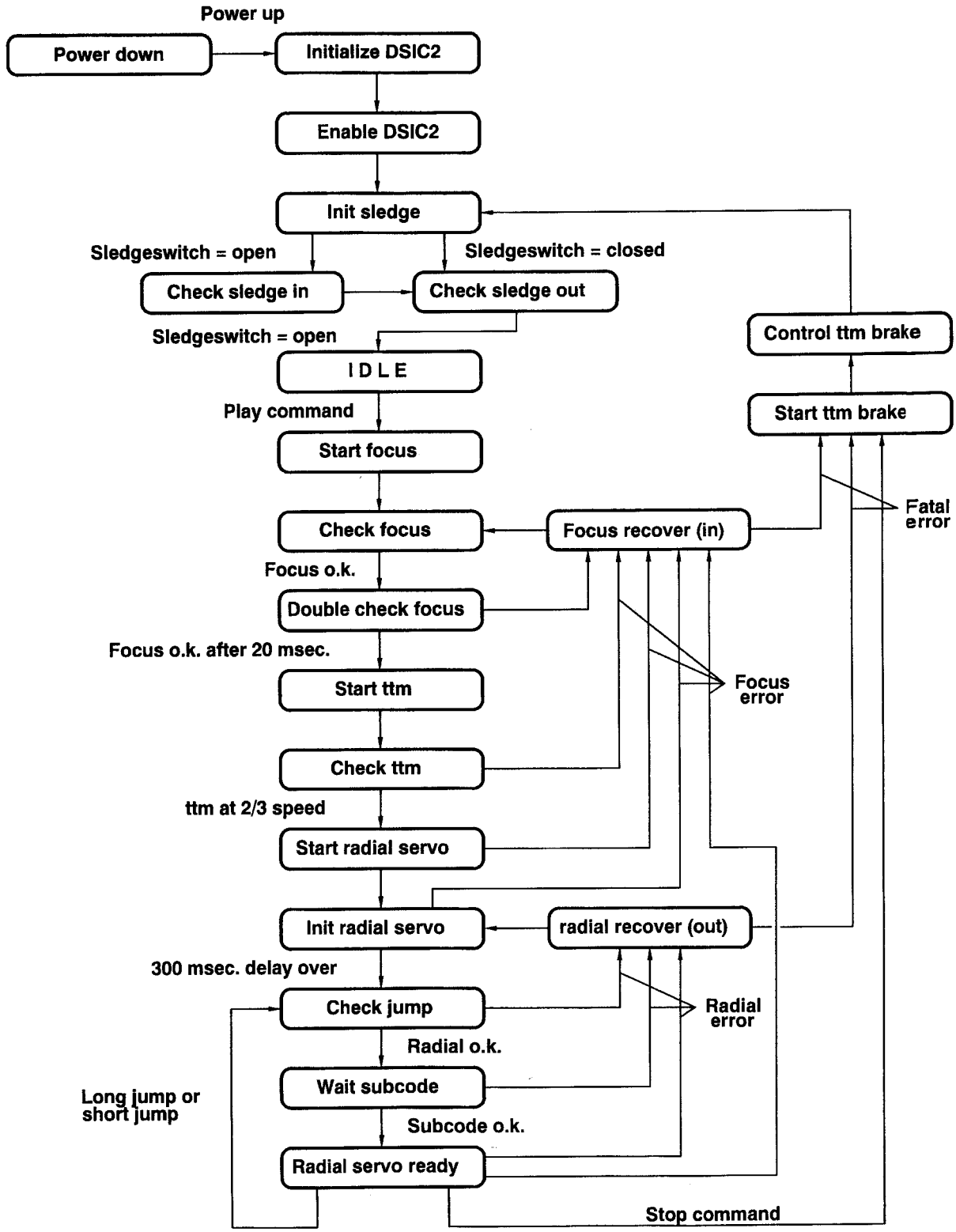

### ERROR MESSAGES

- "SLEDGE ERROR"
- "FOCUS ERROR"
- "RADIAL ERROR"
- "MOTOR ERROR"
- "EEP ER"
- "EEP OK"

HAS1120
9342

Pxxx = PROGRAM OF MICROPROCESSOR
xx = VERSION OF PROGRAM

**CDM 12.1 start up diagram.**



## FAULT FINDING GUIDE CDM 12.1

**Main Fault Finding Guide CDM 12.1 System**

Listen to kind of "scratching sound" while slowly turning the disc by hand.

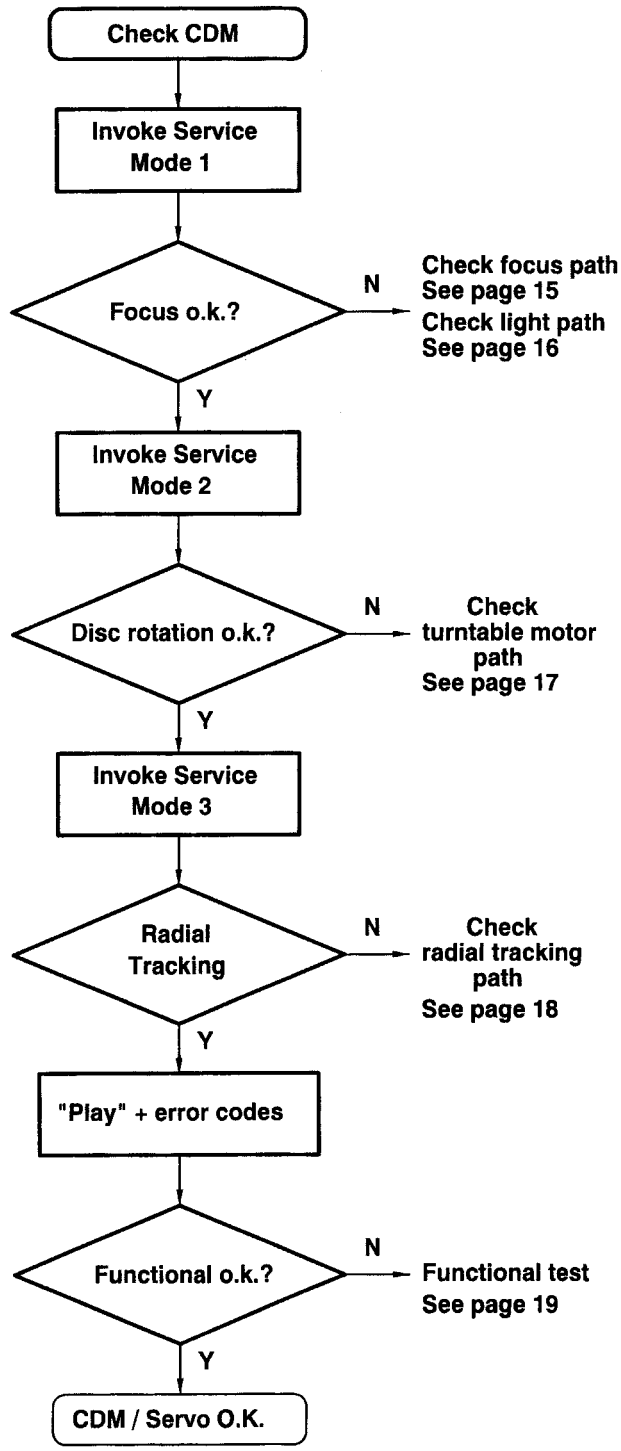
Disc is turning clock wise at normal speed.

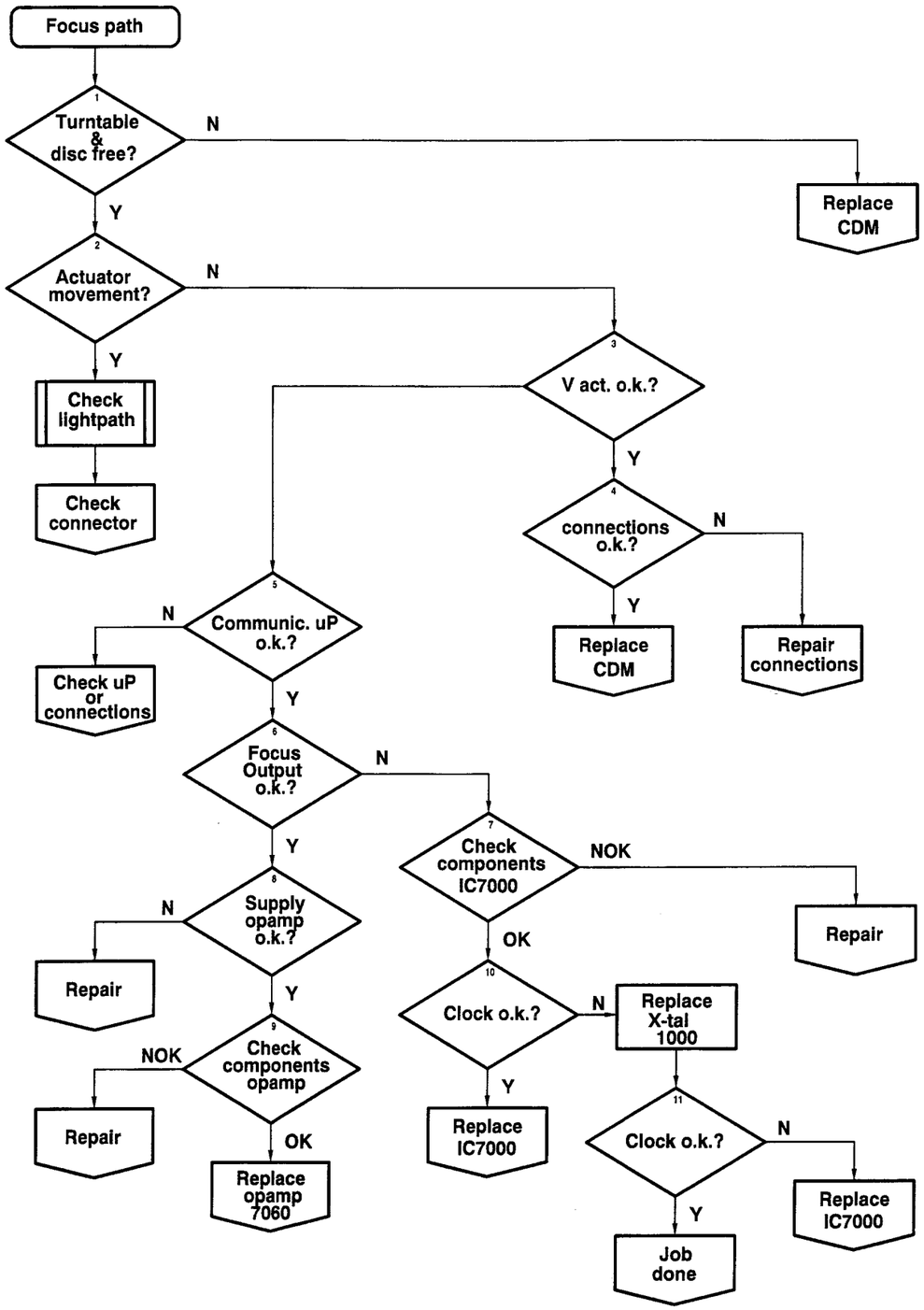
Activity on RAD+ (pin 4 connector 1052)

*After "play" starts at track 1 at time 0:00.
*Go to outer track and start again at time 0:00 after max. 6 seconds.

*Try search function.

*When going from "Pauze" to "play" music has to restart at the same place.



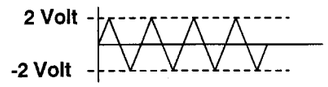



15

1)-Turntable and disc free?
Audible and visible control.

2)-Actuator movement?
Visual control.

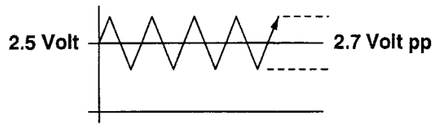
3)-Signals on actuator o.k.?
Triangle wave without disc.
See fig 1.




4)-Connections to actuator o.k.?
Check flex connector pin 2 and 3.

5)-Communication uP <-> IC7000.
SIDA activity (pin 27 of IC7000).

6)-Focus output o.k.?
See fig 2.
Measure with an 10k/3n3 low-pass filter.




7)-Components o.k.?
Check components R3010,R3011
C2012,C2013
X-tal 1000

8)-Power supply for opamp o.k.?
Check components R3006,R3007
C2008,C2009,C2071,C2074

9)-Check components o.k.?
Check components R3074,R3075,R3076,R3077
R3078,R3079
C2075,C2076

10) & 11)-Pin 17 of IC7000: a frequency of 8.46MHz?

**WARNING ! ! ! LASER DAMAGE ! ! !**

For measurements on the laser (flexconnector pin 1052-6), certain conditions are absolutely necessary for precaution of laser damage.

The instruction and sequence for measuring laser current is as follows:

-turn off mains power.
-wait for > 1 second
-connect a multimeter (high input impedance, not grounded accross resistor 3022. (*)
-turn on mains power and go to play mode.
-reading of measurement value (current = reading/4R7) (**)
-go to stop and turn off mains power.
-disconnect the multimeter.

* In case of a laser voltage measurement, connect the multimeter accross elcap 2025, using the same procedure as mentioned above.

* * If current is > 95 mA, you can be sure that the laser is defect;
If the current is increasing during reading (within +/- 10 seconds), you can be sure that the laser is severely damaged.

* 1)-Laser supply o.k.?
Voltage accross C2025: 4...5V

* * 2)-Laser current o.k.?
Voltage accross R3022: 150...450mV

3)-Lens clean?
Visual control. Check for dust,grease.
Take attention for the blue coating.

4)-Check inputs.
Switch back to service mode 0.
Connect a 2.4 MOhm resistor from
1052 - 9 to 5V: Voltage on pin 5 of IC7000 < 50mV.
1052 - 10 to 5V: Voltage on pin 6 of IC7000 < 50mV.
1052 - 12 to 5V: Voltage on pin 7 of IC7000 < 50mV.
1052 - 11 to 5V: Voltage on pin 10 of IC7000 < 50mV.
1052 - 8 to 5V: Voltage on pin 11 of IC7000 < 50mV.

5)-Diodes o.k.?
Use IR LED of remote control.
A half sine wave must be measured on the diodes (on pin 8,9,10,11,12 of conn. 1052) in the 10mV range.

* 6)-V guard o.k.?
Voltage accross C2025: 4...5V

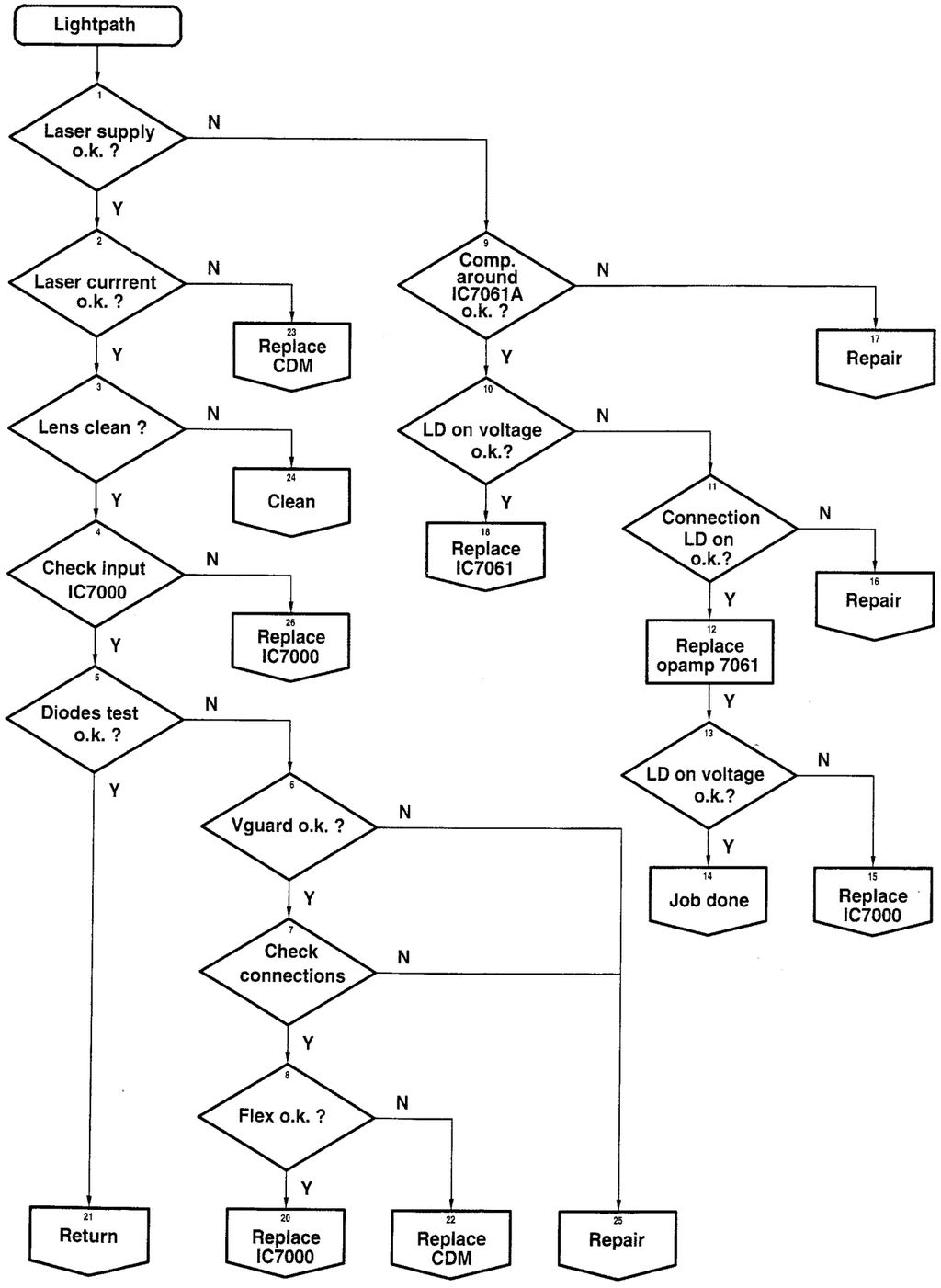
7)-Check connections between main PCB and CDM

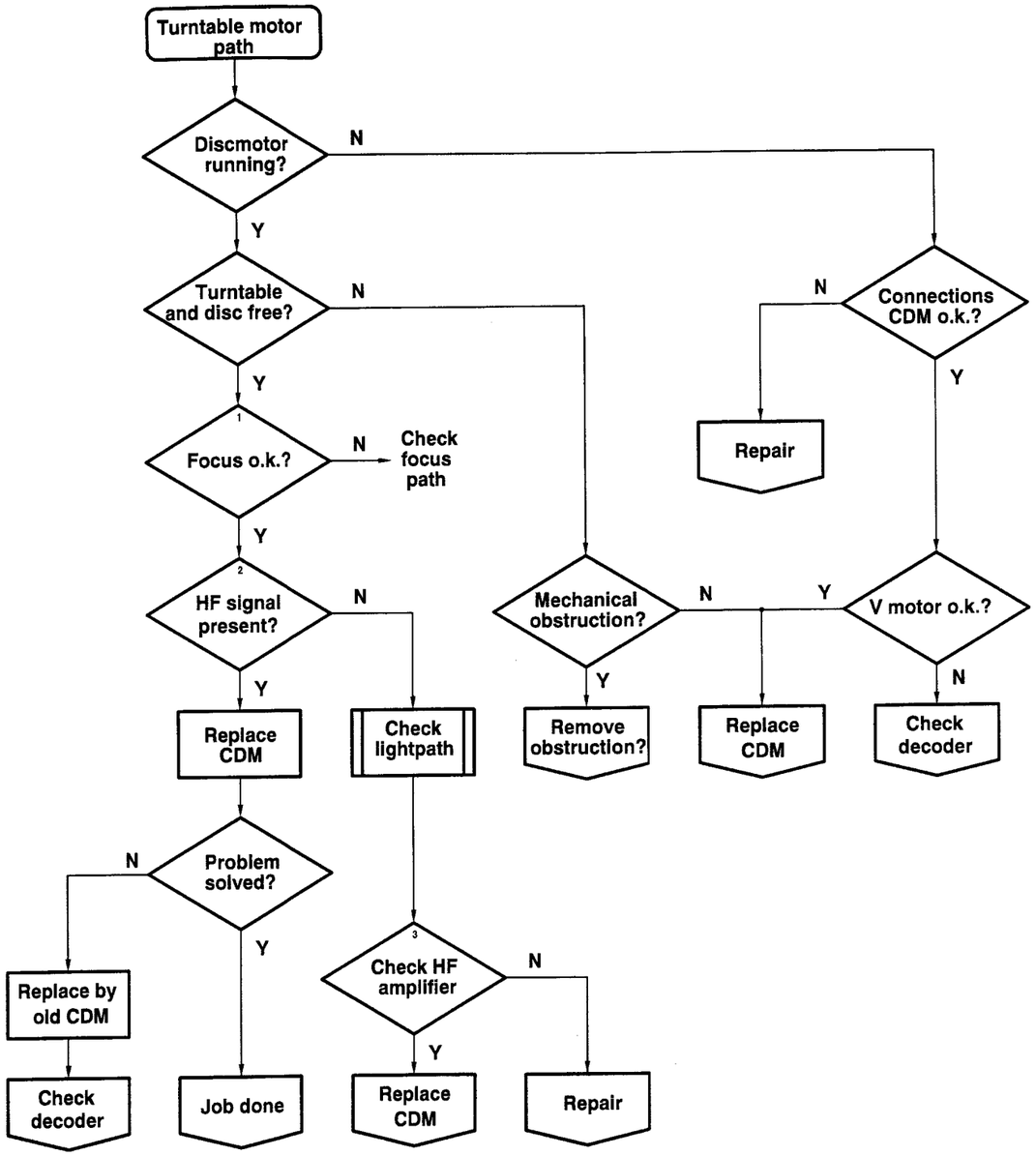
8)-Flex o.k.?
Measure diode functions on CDM-flex

9)-Check components around IC7061
R3022,R3021,R3020
C2025,C2060,C2064

10)-LD ON voltage o.k.?
Measure on pin 2 of IC7000:4...5V.








17

1)-Still in focus (focus o.k.?).
Voltage at pin 9 of connector 1052 > 15mV.

2)-HF-signal present.
VHFI (R3048) > 900mV pp. (testpoint 65).

3)-Check HF-amplifier.

* Sypply 5V?

* Testpoint 17=1.4...1.9V DC?

* VHFI DC =2.9...3.6V?

4)-V motor o.k.?

V motor < 2V: replace CDM.
V motor > 2V: check decoder part.

1)-Radial tracking o.k.?
No OTD (testpoint 67) activity.

2)-Check driver 7060A.
Supply: C2071,C2074.
Components: C2067,C2068,C2069,R3068,R3069,R3070,R3071,R3072,R3073.

3)-Check connections radial actuator.
Switch power off.
Measure impedance of 18 Ohm(+/-20%) between pin 1 and pin 4 of connector 1052.

4)-Check impedance on flex.
Power off.
Disconnect CDM-flex.
Measure impedance of 18 Ohm(+/-20%) between pin 1 and pin 4 of connector 1052.

5)-Test sledge.
Power on.
Invoke service mode 0.
Move sledge out (whith search forward key).
Sledge moves to init position after releasing key.
Not o.k. if sledge doesn't move,doesn't reach the outer position or makes a ratling noise at the inner side.

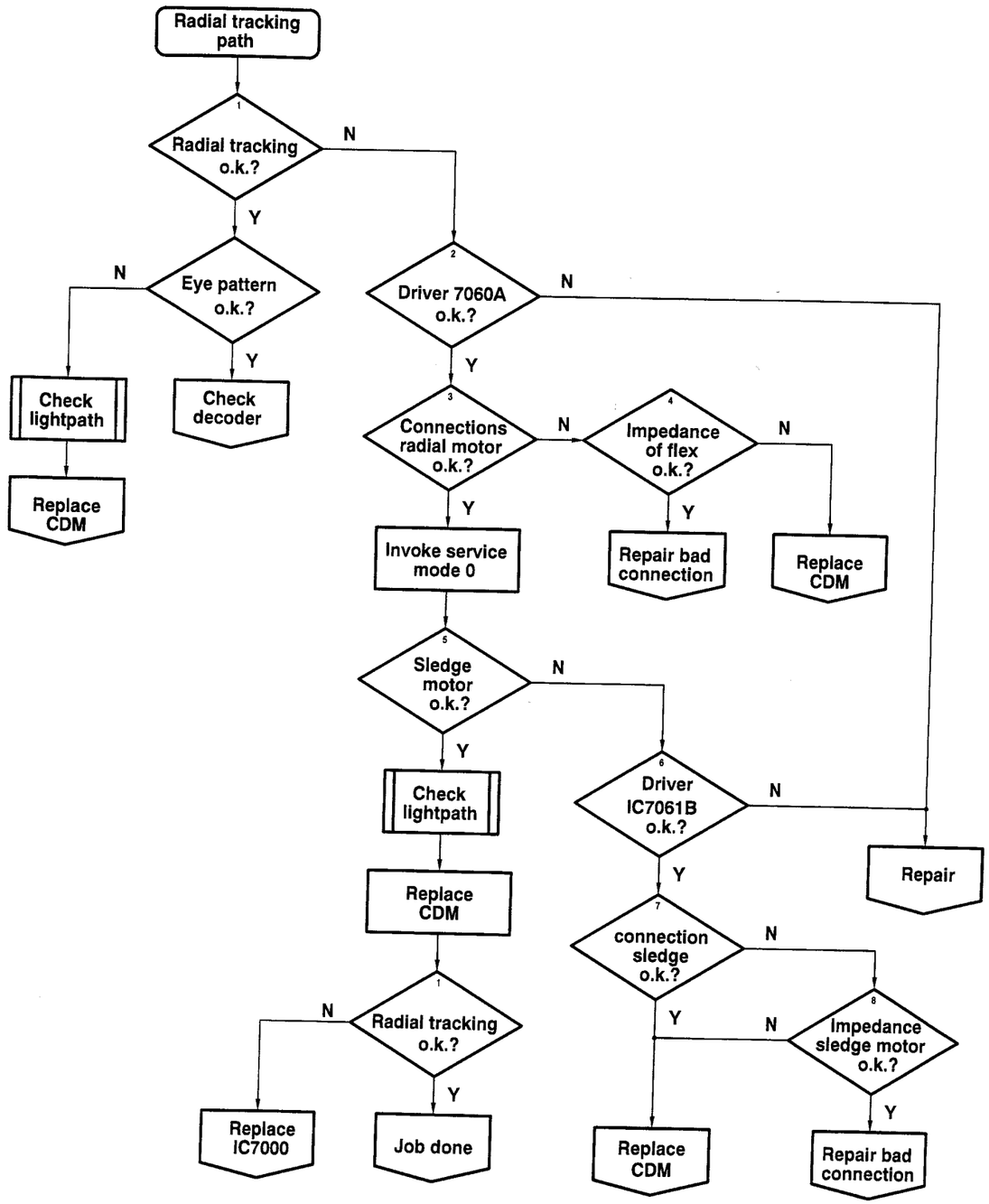
6)-Check driver 7061B.
Supply: C2060,C2064.
Components: C2062,C2063,C2066,R3060,R3062,R3064,R3065,R3066,R3067.

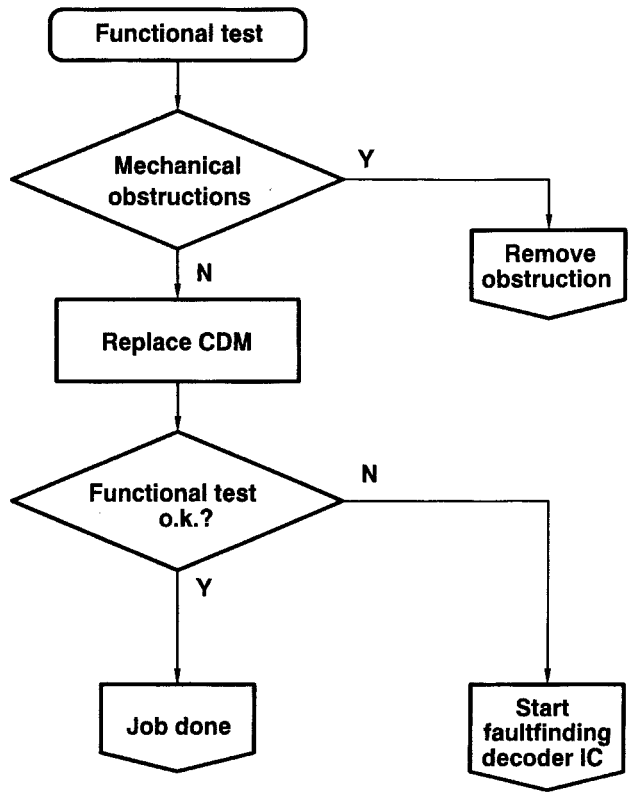
7)-Check connections of sledge drive.
Power off.
Measure impedance of 11 Ohm(+/-20%) between pin 5 and pin 6 of connector 1070.

8)-Check sledge motor.
Remove CDM.
Measure impedance of 11 Ohm(+/-20%) between motor terminals.

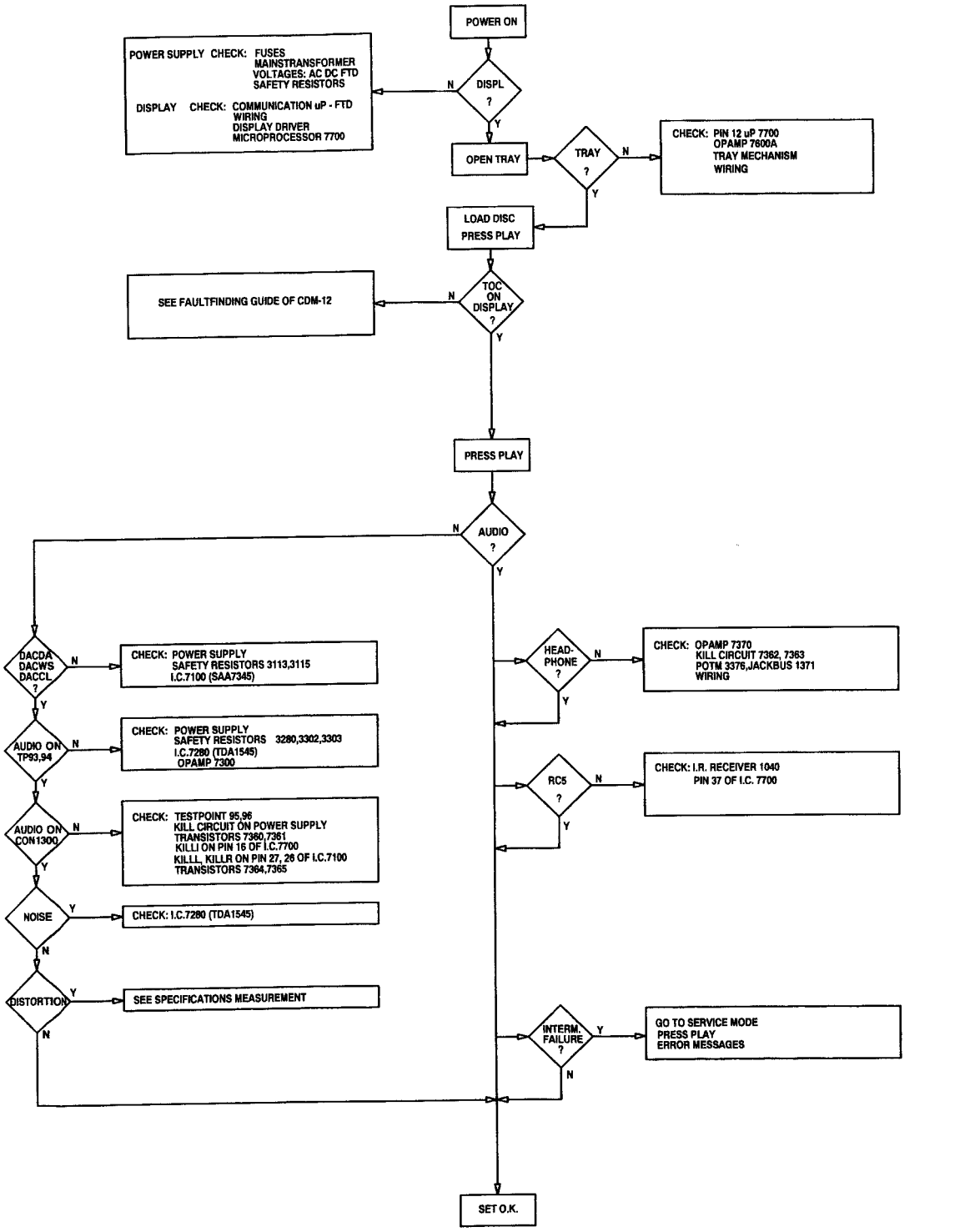


18




Functional test
Mechanical obstructions
Y
Remove obstruction
N
Replace CDM
Functional test o.k.?
N
Y
Job done
Start faultfinding decoder IC

## FAULTFINDING GUIDE

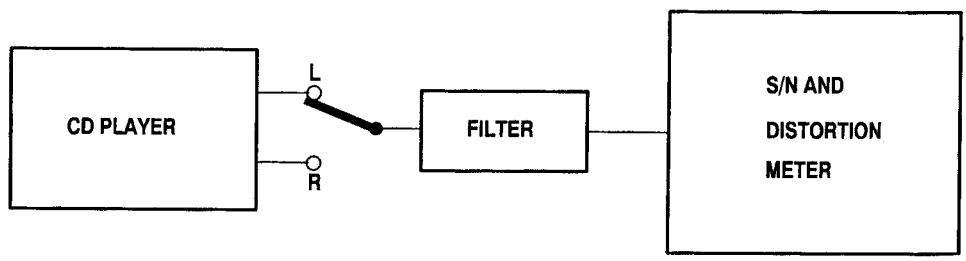



HAS1123
9345

**SPECIFICATIONS MEASUREMENT**

| SIGNAL | AUDIO SIGNALS DISC 1 | TESTPOINT | REMARKS |
|---|---|---|---|
| ANALOG OUT LEFT | TOTAL HARMONIC DISTORTION TRACKS 10 - 23 | FILTER OUTPUT | SEE TECHNICAL DATA |
| ANALOG OUT RIGHT | | | SEE DRAWING |
| ANALOG OUT LEFT | SIGNAL-TO-NOISE RATIO TRACK 1 REFERENCE LEVEL TRACK 49 | FILTER OUTPUT | SEE TECHNICAL DATA |
| ANALOG OUT RIGHT | | | SEE DRAWING |

FILTER = 13TH ORDER FILTER 4822 395 30204




e.g. SOUND TECHNOLOGIE
ST1700B

**ABBREVIATIONS**

| | |
|---|---|
| BCK | Bit clock input of CC-DAC TDA1545 |
| CFLG | correction flag output |
| CL | interface clock input line |
| CL11 | 11.2896 MHz clock output |
| CL16 | 16.9344 MHz system clock output |
| CLA | 4.2336 MHz microprocessor clock output |
| CLO | Clock output |
| CRIN | crystal/resonator input |
| CROUT | crystal/resonator output |
| D1-D4 | Central diode input of TDA1301 |
| D1-D5 | Photodiode signals from CDM12 mechanism |
| DA | interface data I/O line |
| DACCL | Bit clock output of CD6 decoder SAA7345 |
| DACDA | Data output of CD6 decoder SAA7345 |
| DACWS | Word select output of CD6 decoder SAA7345 |
| DATA | serial data output/Data input of CC-DAC TDA1545 |
| DOBM | biphase mark output |
| FO | Focus actuator output |
| FOC+ | +Connection of focus actuator |
| FOC- | Ground connection of focus actuator |
| HF | High-Frequency signal to decoder input |
| HFIN | comparator signal input |
| HFREF | comparator common-mode input |
| IOL | Left channel current output |
| IOR | Right channel current output |
| IREF | Reference current output |
| ISLICE | current feedback from data slicer |
| LDON | Laser drive on |
| MISC | general purpose DAC output |
| MOTO1 | motor output 1 |
| MOTO2 | motor output 2 |
| NRST | Reset input |
| OTD | Off track detector |
| PORE | power-on reset enable input(active low) |
| R1-R2 | Satellite diode signal input |
| RA | Radial actuator output |
| RAB | interface R/W and acknowledge input |
| RAD+ | +Connection of radial actuator |
| RAD- | Ground connection of radial actuator |
| SCLK | serial bit clock output |
| SICL | Serial interface clock |
| SIDA | Serial interface data |
| SILD | Serial interface load |
| SL OUT | +Connection of sledge motor |
| SL | Sledge output |
| TEST1 | test input |
| TEST2 | test input |
| TS1-TS2 | Test inputs |
| V1-5 | Versatile input pins |
| WCLK | Word clock output |
| WS | Word select input of CC-DAC TDA1545 |
| XTLI | Oscillator input |
| XTLO | Oscillator output |
| XTLR | Oscillator reference |

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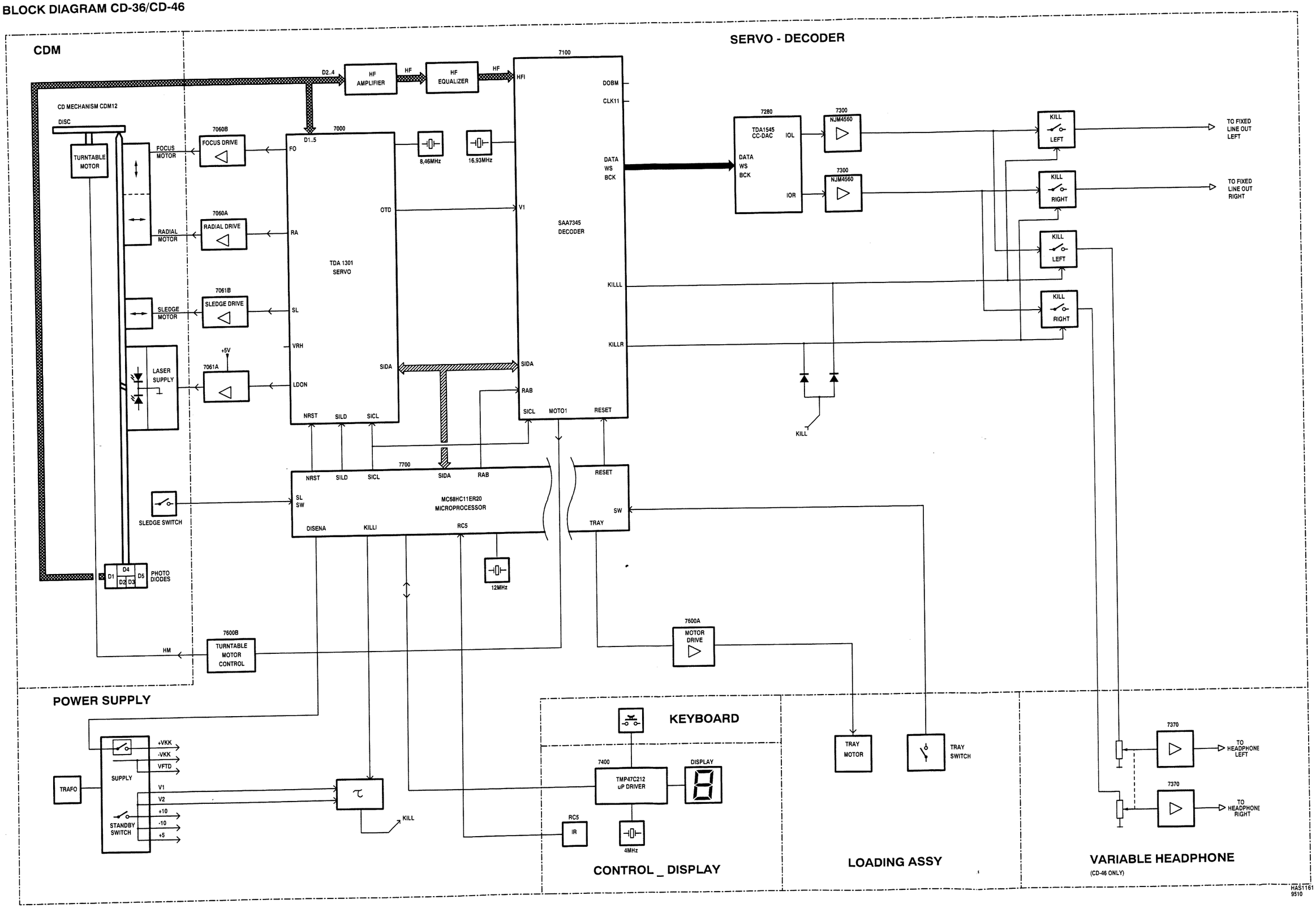
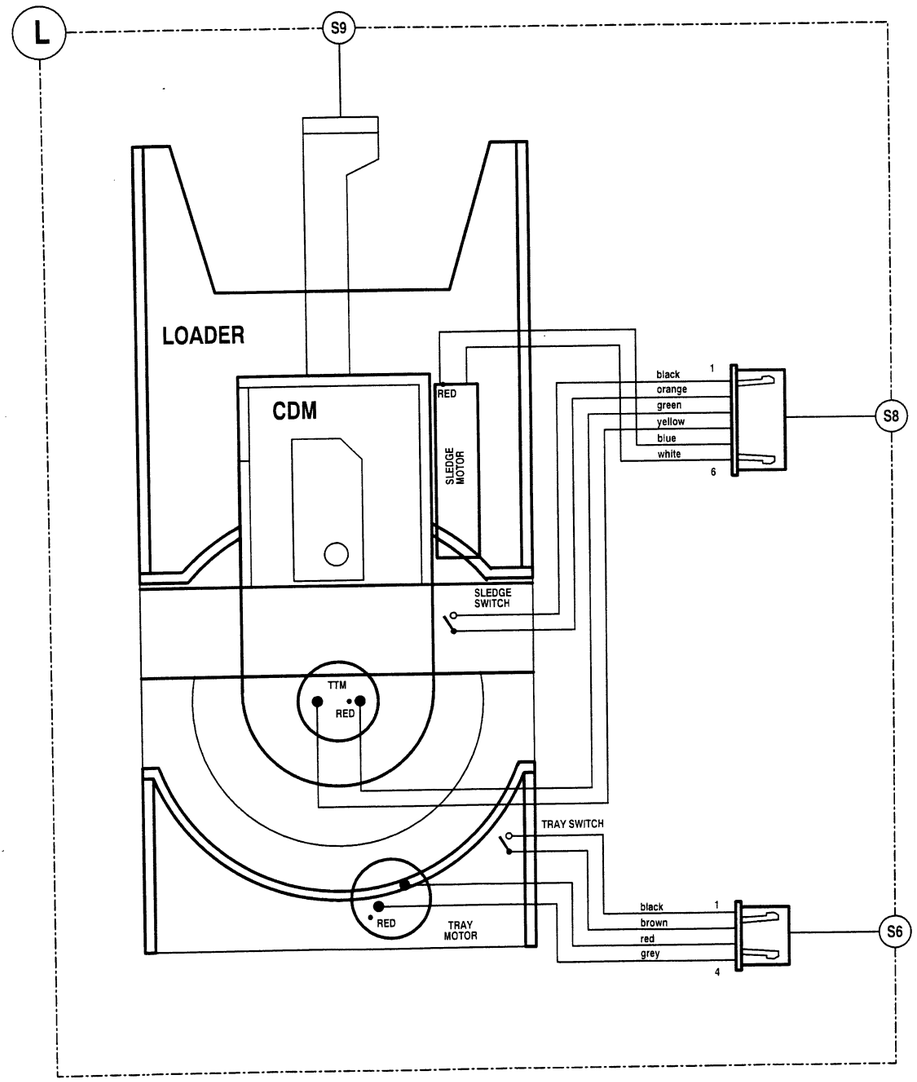
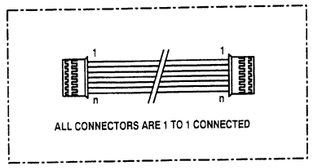
## BLOCK DIAGRAM CD-36/CD-46

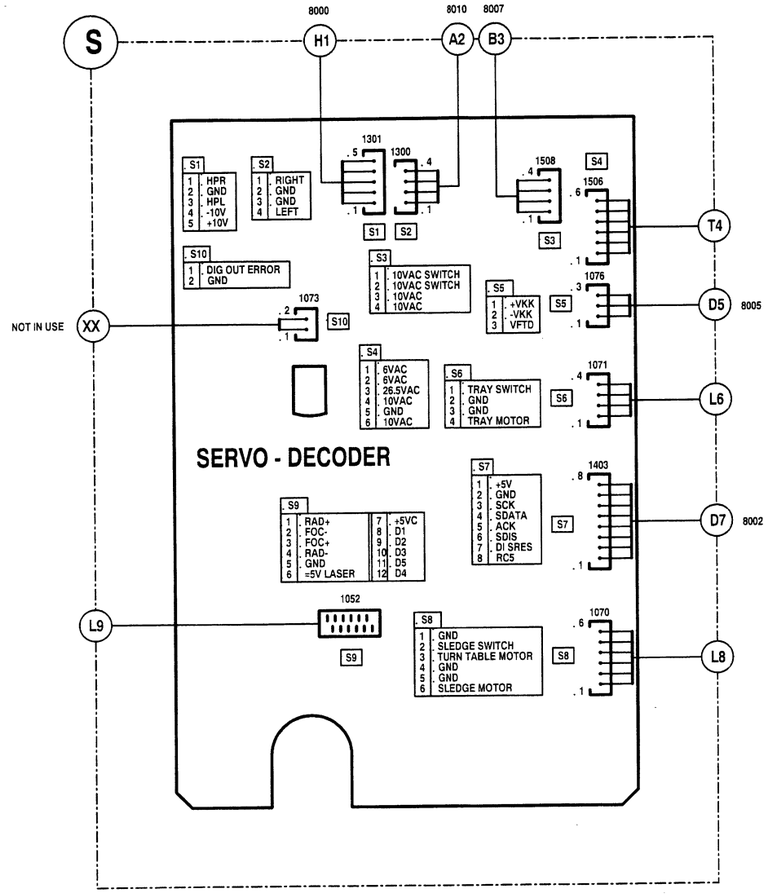


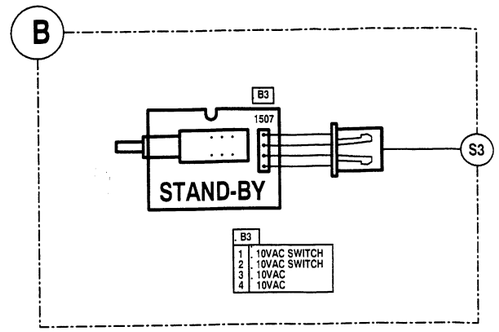
# WIRING DIAGRAM

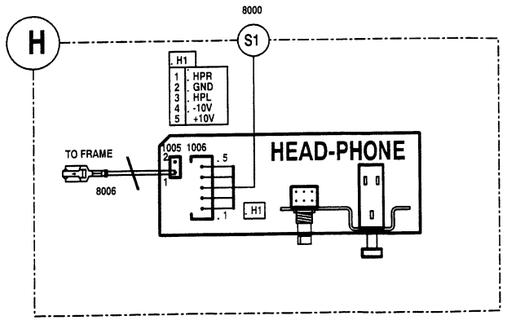


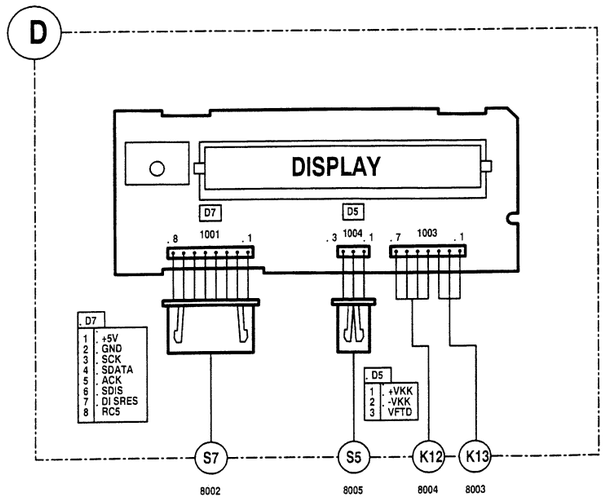



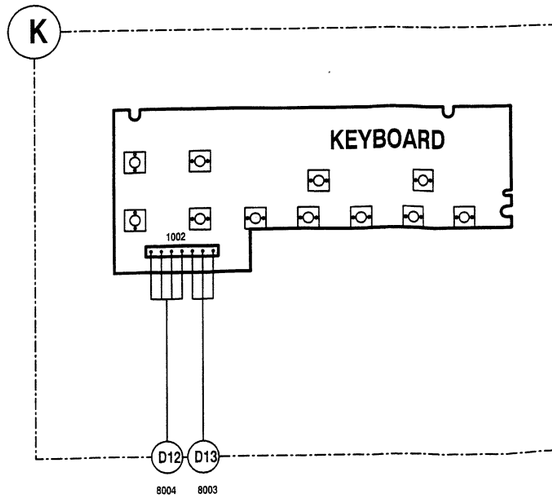


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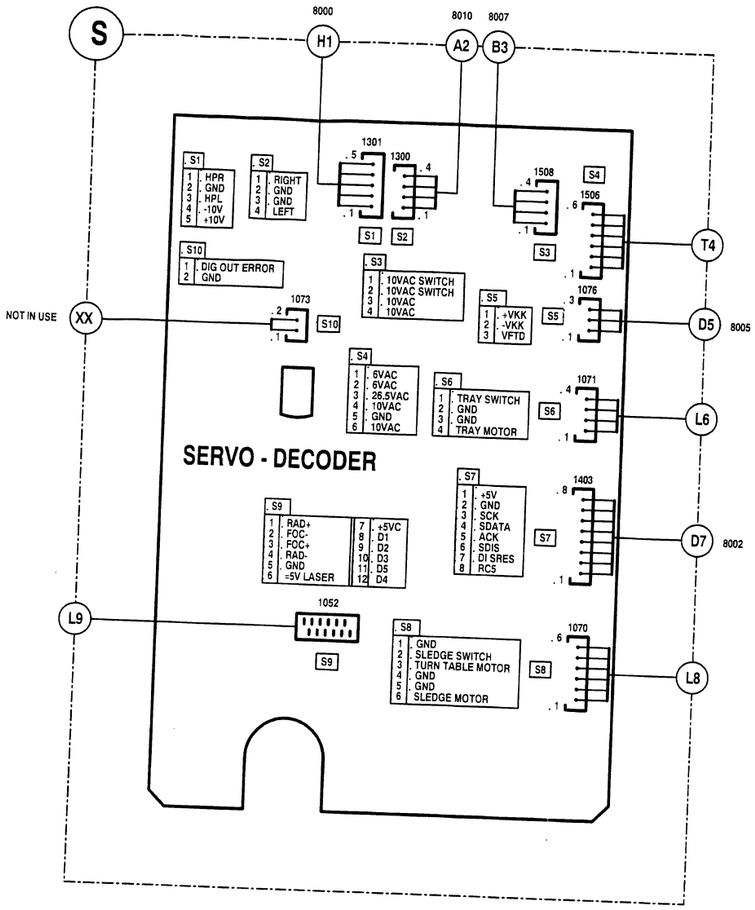
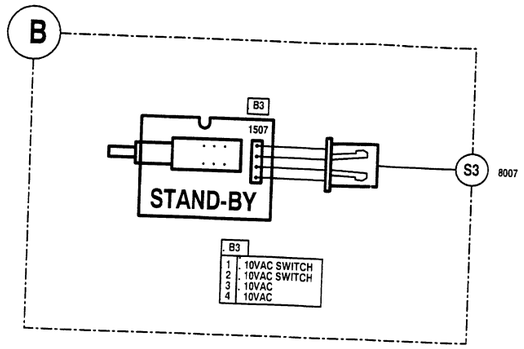
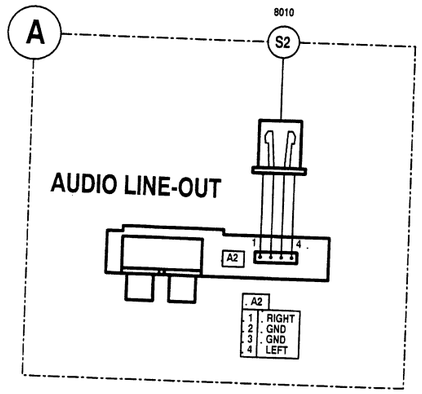
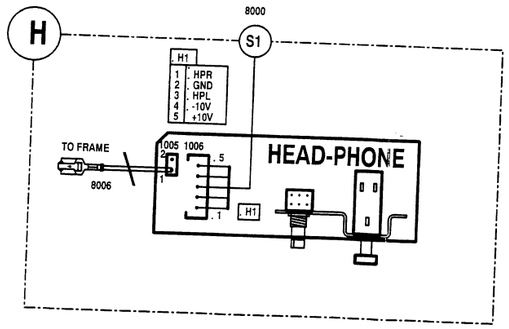
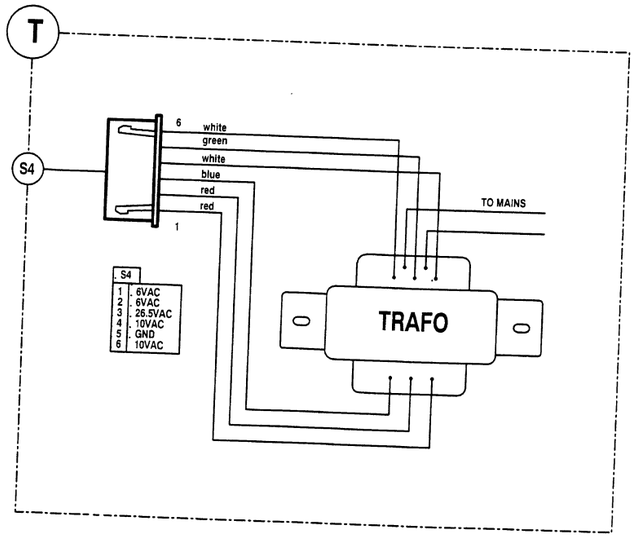
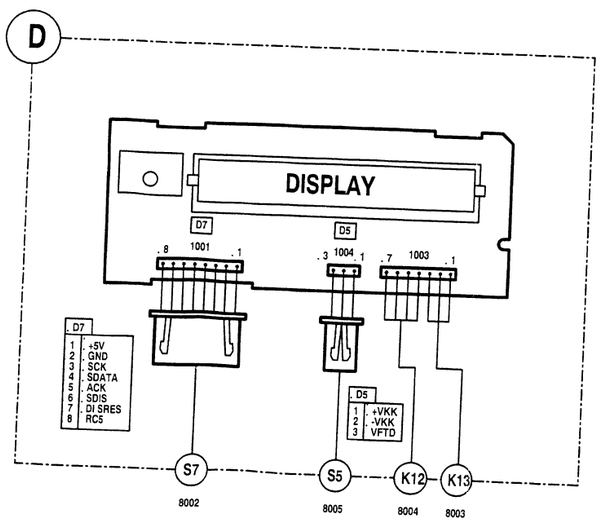


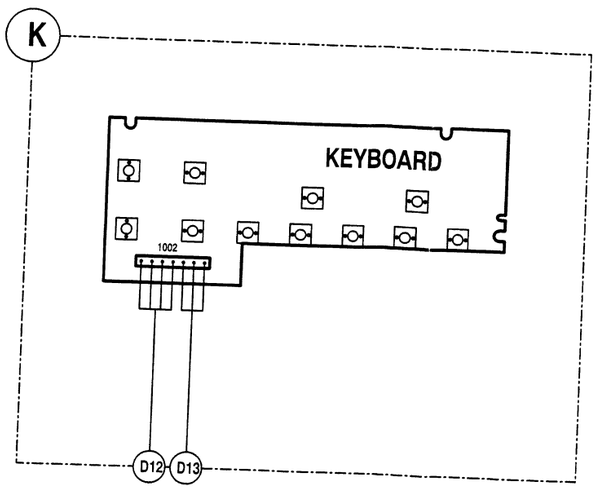



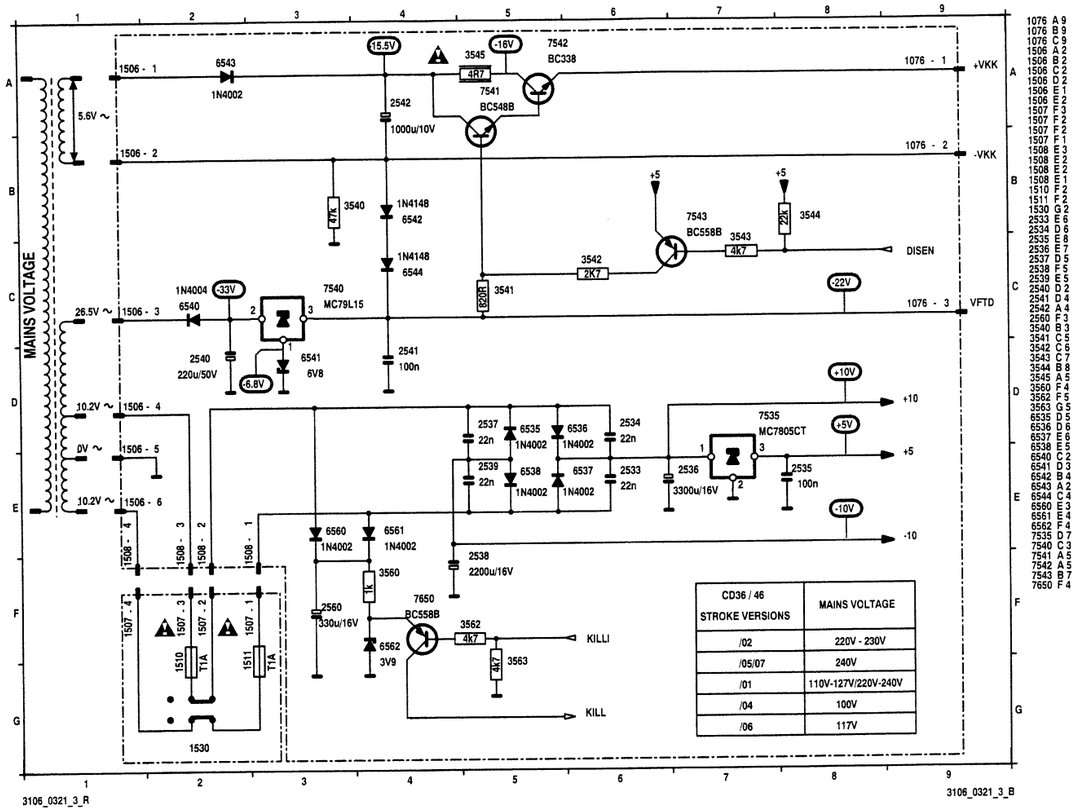



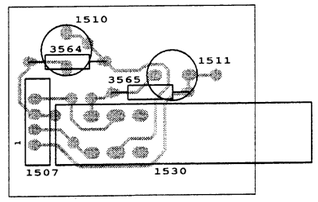




HAS1162
9509

## POWER SUPPLY CIRCUIT DIAGRAM



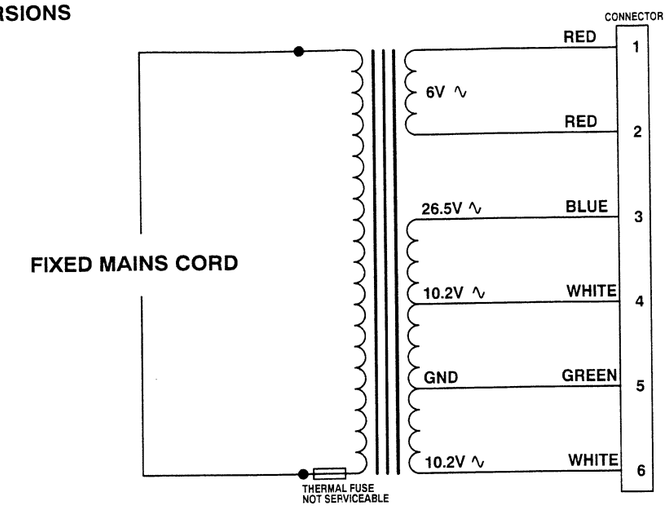

## SWITCH PANEL





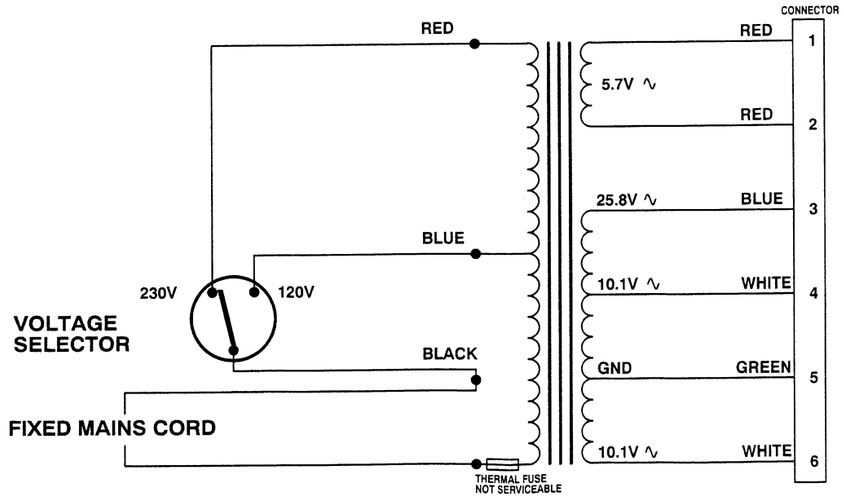

## TRANSFORMER CONNECTIONS

### /02/04/05/06/07 VERSIONS




| VERSION | MAINS VOLTAGE | SERVICE CODE |
|---|---|---|
| /02 | 220V-230V | 4822 146 31337 |
| /05 | 240V | 4822 146 31339 |
| /04 (F) | 100V | 4822 146 31345 |
| /06 (U) | 117V | 4822 146 31341 |
| /07 | 240V | 4822 146 21797 |

### /01 VERSION




| POSITION | MAINS VOLTAGE | SERVICE CODE |
|---|---|---|
| 120V | 110V-127V | 4822 146 21796 |
| 230V | 220V-240V | |

TRANSFORMER AND VOLTAGE SELECTOR ARE ONE ASSEMBLY

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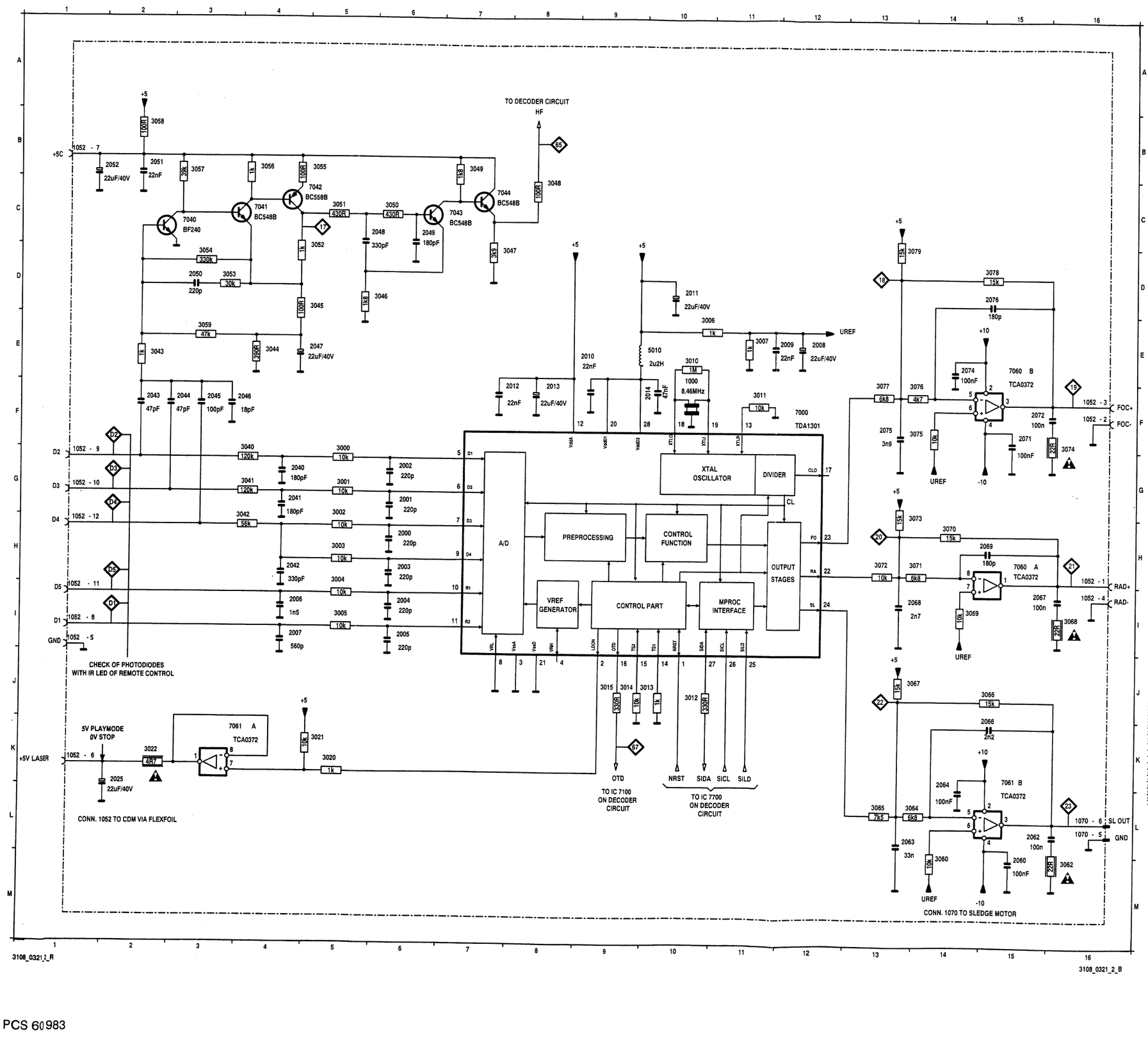
## SERVO CIRCUIT DIAGRAM






17 / 65 — eyepattern: 2.5V, 0,5us/DIV

18 / 20 — STOP MODE: 0,5us/DIV, 80mV, ACTIVITY IN PLAY MODE

19 — ACTIVITY DURING PLAY

21 — ACTIVITY DURING PLAY

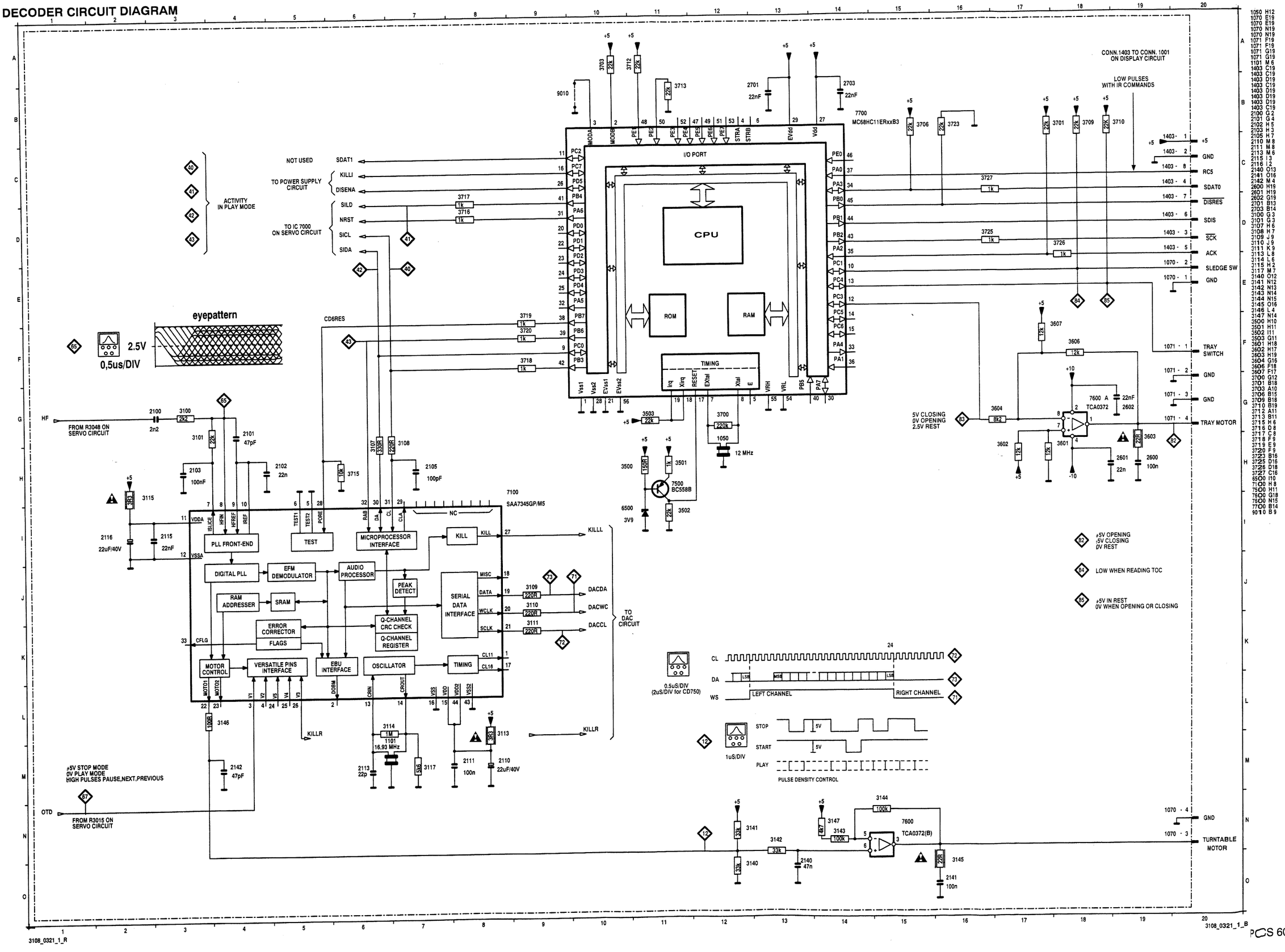
22 — STOP MODE: 0,5us/DIV, 20mV, ACTIVITY IN PLAY MODE

23 — SERVICE MODE 0
SL OUT: -3.5V
SL IN: +3.5V

67 — +5V STOP MODE
0V PLAY MODE
HIGH PULSES PAUSE,NEXT,PREVIOUS

27

# DECODER CIRCUIT DIAGRAM



## DAC CIRCUIT DIAGRAM

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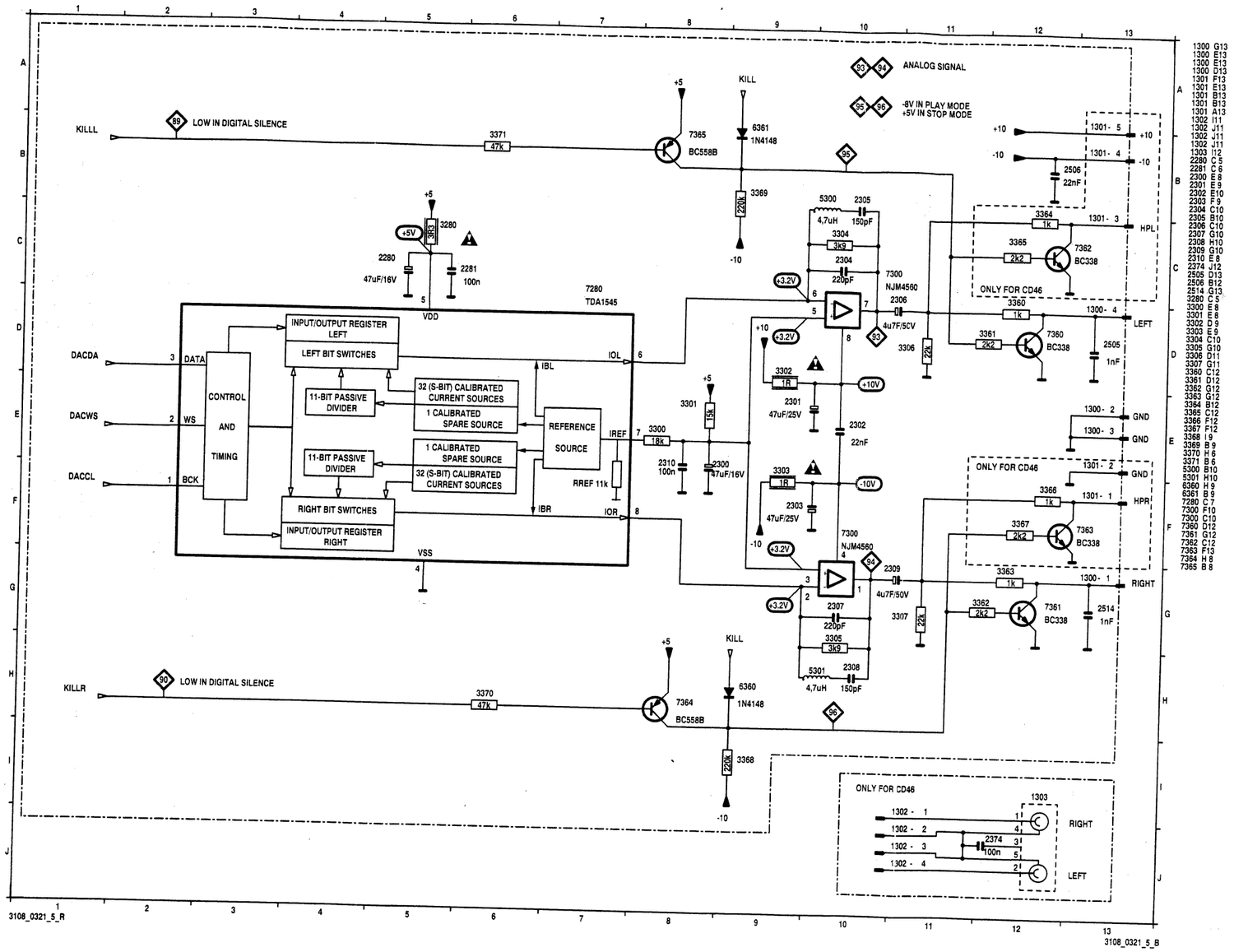

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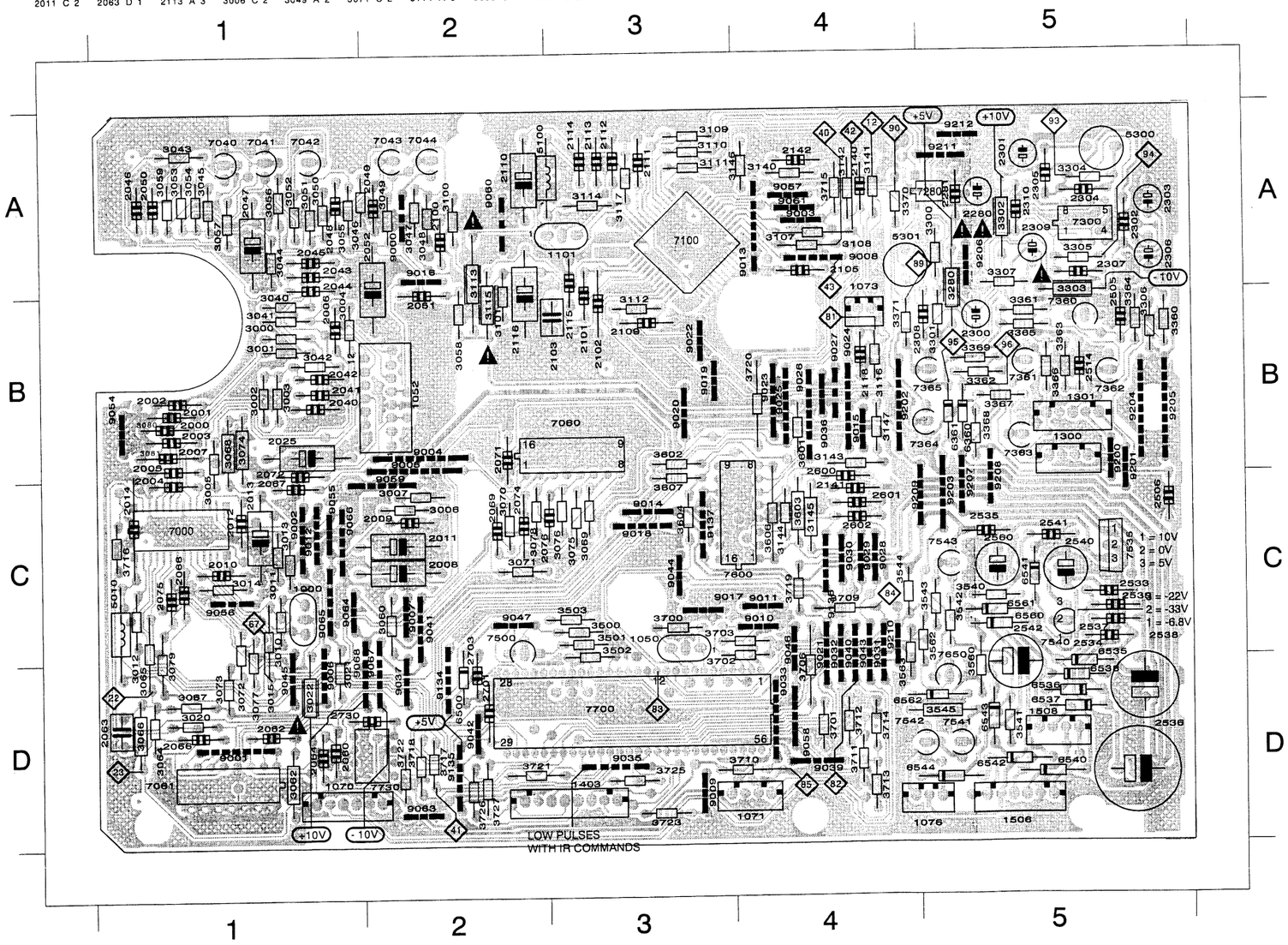
## MAIN PANEL COMPONENT SIDE

| | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1000 C 1 | 2012 C 1 | 2064 D 1 | 2114 A 3 | 3007 C 2 | 3050 A 1 | 3072 C 1 | 3115 B 2 | 3607 C 3 | 3723 D 3 | 9000 A 2 | 9020 B 3 | 9042 D 2 | 9134 D 2 | 2308 B 5 | 3302 A 5 | 3542 C 5 | 6560 C 5 | 9203 C 5 |
| 1050 C 3 | 2013 C 1 | 2066 D 1 | 2115 A 3 | 3010 C 1 | 3051 A 1 | 3073 D 1 | 3116 B 4 | 3700 C 3 | 3725 D 3 | 9001 D 1 | 9021 C 4 | 9043 C 4 | 9135 D 2 | 2309 A 5 | 3303 B 5 | 3543 C 5 | 6561 C 5 | 9204 B 5 |
| 1052 B 2 | 2014 C 1 | 2067 C 1 | 2116 B 2 | 3011 C 1 | 3052 A 1 | 3074 B 1 | 3117 A 3 | 3701 D 4 | 3726 D 2 | 9002 C 1 | 9022 B 3 | 9044 C 3 | 9136 C 4 | 2310 A 5 | 3304 A 5 | 3544 C 4 | 6562 D 5 | 9205 B 5 |
| 1070 D 1 | 2025 B 1 | 2068 C 1 | 2118 B 4 | 3012 C 1 | 3053 A 1 | 3075 C 3 | 3140 A 4 | 3702 C 4 | 3727 D 2 | 9003 A 4 | 9023 B 4 | 9045 D 1 | 9137 C 3 | 2505 B 5 | 3305 A 5 | 3545 D 5 | 7280 A 5 | 9206 A 5 |
| 1071 D 4 | 2040 B 1 | 2069 C 2 | 2140 A 4 | 3013 C 1 | 3054 A 1 | 3076 C 3 | 3141 A 4 | 3703 C 4 | 5010 C 1 | 9004 B 2 | 9024 B 4 | 9046 C 4 | ---- | 2506 C 5 | 3306 B 5 | 3560 D 5 | 7300 A 5 | 9207 C 5 |
| 1073 B 4 | 2041 B 1 | 2071 B 2 | 2141 C 4 | 3014 C 1 | 3055 A 1 | 3077 C 1 | 3142 A 4 | 3706 D 4 | 5100 A 3 | 9005 B 2 | 9025 B 4 | 9047 C 2 | 1076 D 5 | 2514 B 5 | 3307 A 5 | 3562 C 5 | 7360 B 5 | 9208 C 5 |
| 1101 A 3 | 2042 B 1 | 2072 B 1 | 2142 A 4 | 3015 C 1 | 3056 A 1 | 3078 C 2 | 3143 B 4 | 3709 C 4 | 6500 D 2 | 9006 D 1 | 9026 B 4 | 9054 B 1 | 1300 B 5 | 2533 C 5 | 3360 B 5 | 3563 C 4 | 7361 B 5 | 9209 C 4 |
| 1403 D 3 | 2043 A 1 | 2074 C 2 | 2600 C 4 | 3020 D 1 | 3057 A 1 | 3079 C 1 | 3144 C 4 | 3710 D 4 | 7000 C 1 | 9007 C 2 | 9027 B 4 | 9055 C 1 | 1301 B 5 | 2534 C 5 | 3361 B 5 | 5300 A 5 | 7362 B 5 | 9210 C 4 |
| 2000 B 1 | 2044 A 1 | 2075 C 1 | 2601 C 4 | 3021 D 1 | 3058 B 2 | 3080 B 1 | 3145 C 4 | 3711 D 4 | 7040 A 1 | 9008 A 4 | 9028 C 4 | 9056 C 1 | 1506 D 5 | 2535 C 5 | 3362 B 5 | 5301 A 4 | 7363 B 5 | 9211 A 5 |
| 2001 B 1 | 2045 A 1 | 2076 C 3 | 2602 C 4 | 3022 D 1 | 3059 A 1 | 3081 B 1 | 3146 A 4 | 3712 D 4 | 7041 A 1 | 9009 D 3 | 9029 C 4 | 9057 A 4 | 1508 D 5 | 2536 D 5 | 3363 B 5 | 6360 B 5 | 7364 B 5 | 9212 A 5 |
| 2002 B 1 | 2046 A 1 | 2100 A 2 | 2701 D 2 | 3040 B 1 | 3060 C 2 | 3100 A 2 | 3147 B 4 | 3713 D 4 | 7042 A 1 | 9010 C 4 | 9030 C 4 | 9058 D 4 | 2280 A 5 | 2537 C 5 | 3364 B 5 | 6361 B 5 | 7365 B 5 | |
| 2003 B 1 | 2047 A 1 | 2101 B 3 | 2703 D 2 | 3041 B 1 | 3062 D 1 | 3101 B 2 | 3500 C 3 | 3714 D 4 | 7043 A 2 | 9011 C 4 | 9031 C 4 | 9059 C 2 | 2281 A 5 | 2538 D 5 | 3365 B 5 | 6535 D 5 | 7535 C 5 | |
| 2004 C 1 | 2048 A 1 | 2102 B 3 | 2730 D 2 | 3042 B 1 | 3064 D 1 | 3107 A 4 | 3501 C 3 | 3715 A 4 | 7044 A 2 | 9012 C 1 | 9032 C 4 | 9060 A 2 | 2300 B 5 | 2539 C 5 | 3366 B 5 | 6536 D 5 | 7540 C 5 | |
| 2005 B 1 | 2049 A 2 | 2103 B 3 | 3000 B 1 | 3043 A 1 | 3065 C 1 | 3108 A 4 | 3502 C 3 | 3716 C 1 | 7060 B 3 | 9013 A 4 | 9033 D 4 | 9061 A 4 | 2301 A 5 | 2540 C 5 | 3367 B 5 | 6537 D 5 | 7541 D 5 | |
| 2006 B 1 | 2050 A 1 | 2105 A 4 | 3001 B 1 | 3044 A 1 | 3066 D 1 | 3109 A 3 | 3503 C 3 | 3717 D 2 | 7061 D 1 | 9014 C 3 | 9035 D 3 | 9063 D 2 | 2302 A 5 | 2541 C 5 | 3368 B 5 | 6538 D 5 | 7542 D 5 | |
| 2007 B 1 | 2051 B 2 | 2109 B 3 | 3002 B 1 | 3045 A 1 | 3067 D 1 | 3110 A 3 | 3601 B 4 | 3718 D 2 | 7100 A 3 | 9015 B 4 | 9036 B 4 | 9064 C 1 | 2303 A 5 | 2542 D 5 | 3369 B 5 | 6540 D 5 | 7543 C 5 | |
| 2008 C 2 | 2052 A 2 | 2110 A 2 | 3003 B 1 | 3046 A 1 | 3088 B 1 | 3111 A 3 | 3602 B 3 | 3719 C 4 | 7500 C 2 | 9016 A 2 | 9037 D 2 | 9065 C 1 | 2304 A 5 | 2560 C 5 | 3370 A 4 | 6541 C 5 | 7650 D 5 | |
| 2009 C 2 | 2060 D 1 | 2111 A 3 | 3004 B 1 | 3047 A 2 | 3069 C 3 | 3112 B 3 | 3603 C 4 | 3720 B 4 | 7600 C 4 | 9017 C 3 | 9039 D 4 | 9066 C 1 | 2305 A 5 | 3280 B 5 | 3371 B 4 | 6542 D 5 | 9200 B 5 | |
| 2010 C 1 | 2062 D 1 | 2112 A 3 | 3005 B 1 | 3048 A 2 | 3070 C 2 | 3113 A 2 | 3604 C 3 | 3721 D 2 | 7700 D 3 | 9018 C 3 | 9040 C 4 | 9067 D 2 | 2306 A 5 | 3300 A 5 | 3540 C 5 | 6543 D 5 | 9201 B 5 | |
| 2011 C 2 | 2063 D 1 | 2113 A 3 | 3006 C 2 | 3049 A 2 | 3071 C 2 | 3114 A 3 | 3606 C 4 | 3722 D 2 | 7730 D 2 | 9019 B 3 | 9041 C 2 | 9068 D 1 | 2307 A 5 | 3301 B 5 | 3541 D 5 | 6544 D 5 | 9202 B 4 | |



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## MAIN PANEL SOLDER SIDE

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| 9203 C 5 | 6560 C 5 | 3542 C 5 | 3302 A 5 | 2308 B 5 | 9134 D 2 | 9042 D 2 | 9020 B 3 | 9000 A 2 | 3723 D 3 | 3607 C 3 | 3115 B 2 | 3072 C 1 | 3050 A 1 | 3007 C 2 | 2114 A 3 | 2064 D 1 | 2012 C 1 | 1000 C 1 |
| 9204 B 5 | 6561 C 5 | 3543 C 5 | 3303 B 5 | 2309 A 5 | 9135 D 2 | 9043 C 4 | 9021 C 4 | 9001 D 1 | 3725 D 3 | 3700 C 3 | 3116 B 4 | 3073 D 1 | 3051 A 1 | 3010 C 1 | 2115 A 3 | 2066 D 1 | 2013 C 1 | 1050 C 3 |
| 9205 B 5 | 6562 D 5 | 3544 C 4 | 3304 A 5 | 2310 A 5 | 9136 C 4 | 9044 C 3 | 9022 B 3 | 9002 C 1 | 3726 D 2 | 3701 D 4 | 3117 A 3 | 3074 B 1 | 3052 A 1 | 3011 C 1 | 2116 B 2 | 2067 C 1 | 2014 C 1 | 1052 B 2 |
| 9206 A 5 | 7280 A 5 | 3545 D 5 | 3305 A 5 | 2505 B 5 | 9137 C 3 | 9045 D 1 | 9023 B 4 | 9003 A 4 | 3727 D 2 | 3702 C 4 | 3140 A 4 | 3075 C 3 | 3053 A 1 | 3012 C 1 | 2118 B 4 | 2068 C 1 | 2025 B 1 | 1070 D 1 |
| 9207 C 5 | 7300 A 5 | 3560 D 5 | 3306 B 5 | 2506 C 5 | ---- | 9046 C 4 | 9024 B 4 | 9004 B 2 | 5010 C 1 | 3703 C 4 | 3141 A 4 | 3076 C 3 | 3054 A 1 | 3013 C 1 | 2140 A 4 | 2069 C 2 | 2040 B 1 | 1071 D 4 |
| 9208 C 5 | 7360 B 5 | 3562 C 5 | 3307 A 5 | 2514 B 5 | 1076 D 5 | 9047 C 2 | 9025 B 4 | 9005 B 2 | 5100 A 3 | 3706 D 4 | 3142 A 4 | 3077 C 1 | 3055 A 1 | 3014 C 1 | 2141 C 4 | 2071 B 2 | 2041 B 1 | 1073 B 4 |
| 9209 C 4 | 7361 B 5 | 3563 C 4 | 3360 B 5 | 2533 C 5 | 1300 B 5 | 9054 B 1 | 9026 B 4 | 9006 D 1 | 6500 D 2 | 3709 C 4 | 3143 B 4 | 3078 C 2 | 3056 A 1 | 3015 C 1 | 2142 A 4 | 2072 B 1 | 2042 B 1 | 1101 A 3 |
| 9210 C 4 | 7362 B 5 | 5300 A 5 | 3361 B 5 | 2534 C 5 | 1301 B 5 | 9055 C 1 | 9027 B 4 | 9007 C 2 | 7000 C 1 | 3710 D 4 | 3144 C 4 | 3079 C 1 | 3057 A 1 | 3020 D 1 | 2600 C 4 | 2074 C 2 | 2043 A 1 | 1403 D 3 |
| 9211 A 5 | 7363 B 5 | 5301 A 4 | 3362 B 5 | 2535 C 5 | 1506 D 5 | 9056 C 1 | 9028 C 4 | 9008 A 4 | 7040 A 1 | 3711 D 4 | 3145 C 4 | 3080 B 1 | 3058 B 2 | 3021 D 1 | 2601 C 4 | 2075 C 1 | 2044 A 1 | 2000 B 1 |
| 9212 A 5 | 7364 B 5 | 6360 B 5 | 3363 B 5 | 2536 D 5 | 1508 D 5 | 9057 A 4 | 9029 C 4 | 9009 D 3 | 7041 A 1 | 3712 D 4 | 3146 A 4 | 3081 B 1 | 3059 A 1 | 3022 D 1 | 2602 C 4 | 2076 C 3 | 2045 A 1 | 2001 B 1 |
| | 7365 B 5 | 6361 B 5 | 3364 B 5 | 2537 C 5 | 2280 A 5 | 9058 D 4 | 9030 C 4 | 9010 C 4 | 7042 A 1 | 3713 D 4 | 3147 B 4 | 3100 A 2 | 3060 C 2 | 3040 B 1 | 2701 D 2 | 2100 A 2 | 2046 A 1 | 2002 B 1 |
| | 7535 C 5 | 6535 D 5 | 3365 B 5 | 2538 D 5 | 2281 A 5 | 9059 C 2 | 9031 C 4 | 9011 C 4 | 7043 A 2 | 3714 D 4 | 3500 C 3 | 3101 B 2 | 3062 D 1 | 3041 B 1 | 2703 D 2 | 2101 B 3 | 2047 A 1 | 2003 B 1 |
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| | 7541 D 5 | 6537 D 5 | 3367 B 5 | 2540 C 5 | 2301 A 5 | 9061 A 4 | 9033 D 4 | 9013 A 4 | 7060 B 3 | 3716 C 1 | 3502 C 3 | 3108 A 4 | 3065 C 1 | 3043 A 1 | 3000 B 1 | 2103 B 3 | 2049 A 2 | 2005 B 1 |
| | 7542 D 5 | 6538 D 5 | 3368 B 5 | 2541 C 5 | 2302 A 5 | 9063 D 2 | 9035 D 3 | 9014 C 3 | 7061 D 1 | 3717 D 2 | 3503 C 3 | 3109 A 3 | 3066 D 1 | 3044 A 1 | 3001 B 1 | 2105 A 4 | 2050 A 1 | 2006 B 1 |
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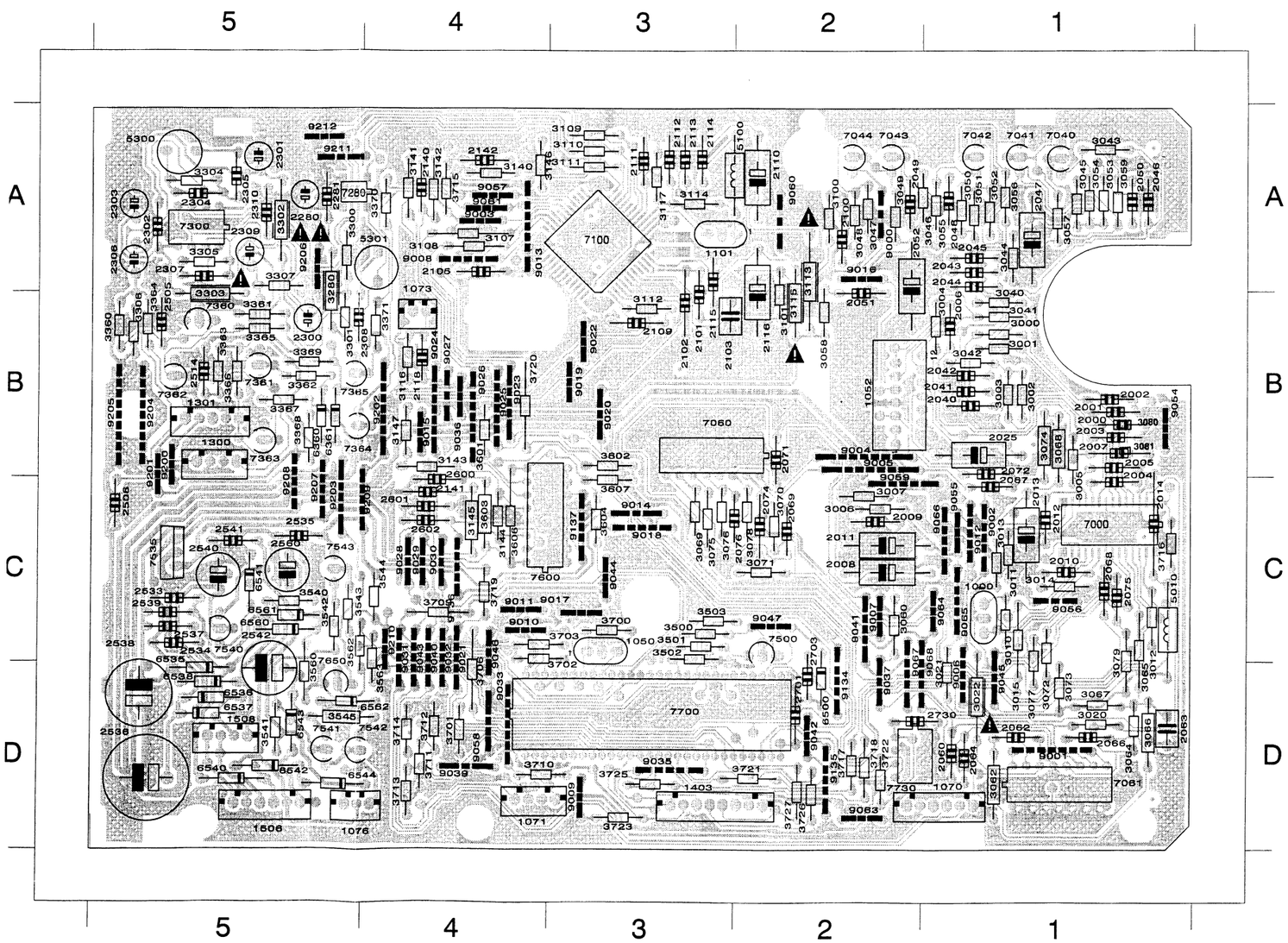
| | 9200 B 5 | 6542 D 5 | 3371 B 4 | 3280 B 5 | 2305 A 5 | 9066 C 1 | 9039 D 4 | 9017 C 3 | 7600 C 4 | 3720 B 4 | 3603 C 4 | 3112 B 3 | 3069 C 3 | 3047 A 2 | 3004 B 1 | 2111 A 3 | 2060 D 1 | 2009 C 2 |
| | 9201 B 5 | 6543 D 5 | 3540 C 5 | 3300 A 5 | 2306 A 5 | 9067 D 2 | 9040 C 4 | 9018 C 3 | 7700 D 3 | 3721 D 2 | 3604 C 3 | 3113 A 2 | 3070 C 2 | 3048 A 2 | 3005 B 1 | 2112 A 3 | 2062 D 1 | 2010 C 1 |
| | 9202 B 4 | 6544 D 5 | 3541 D 5 | 3301 B 5 | 2307 A 5 | 9068 D 1 | 9041 C 2 | 9019 B 3 | 7730 D 2 | 3722 D 2 | 3606 C 4 | 3114 A 3 | 3071 C 2 | 3049 A 2 | 3006 C 2 | 2113 A 3 | 2063 D 1 | 2011 C 2 |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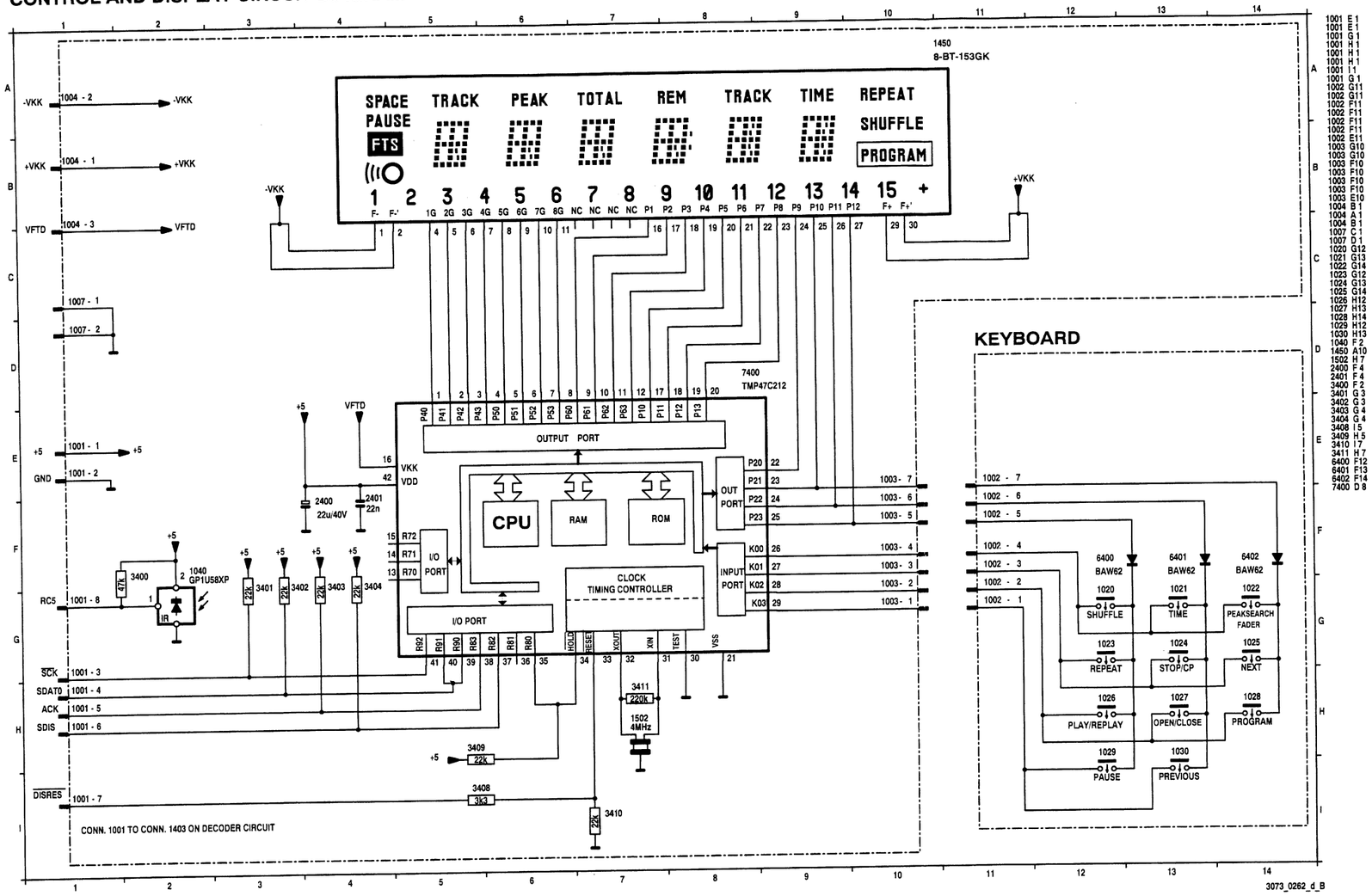
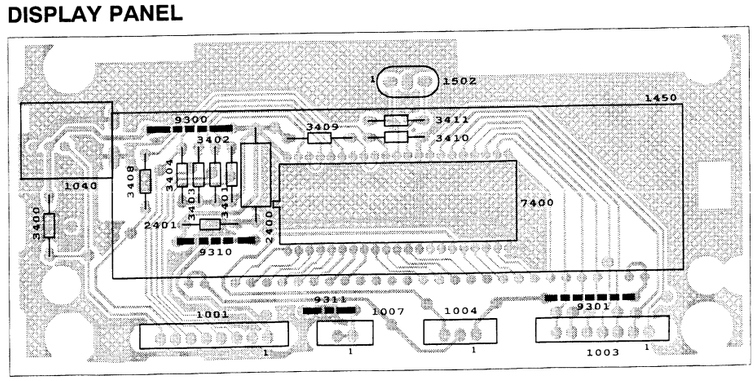
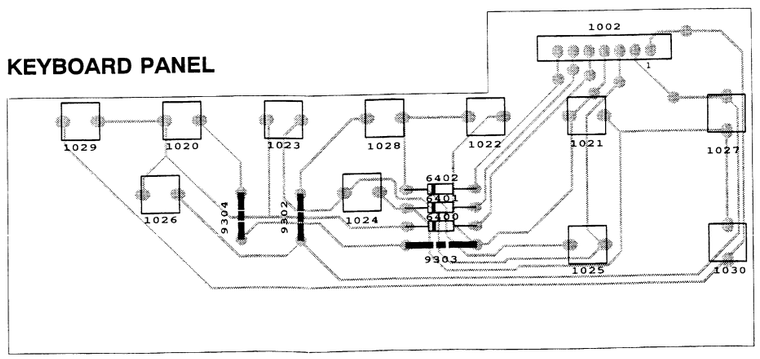
## CONTROL AND DISPLAY CIRCUIT DIAGRAM




## DISPLAY PANEL




## KEYBOARD PANEL



## HEADPHONE CIRCUIT DIAGRAM(CD46 only)

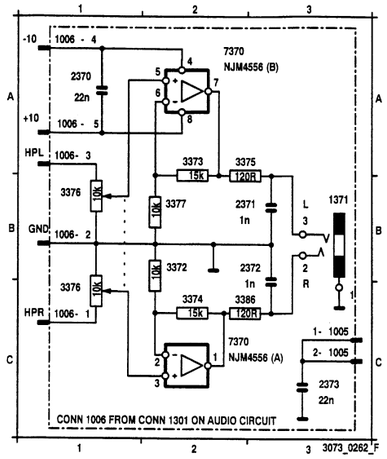
1005 C 3
1005 C 3
1006 C 1
1006 B 1
1006 A 1

1006 A 1
1006 A 1
1371 B 3
2370 A 1
2371 B 2

2372 B 3
2373 C 3
3372 B 2
3373 A 2
3374 C 2

3375 A 3
3376 C 1
3376 B 1
3377 B 2
3386 C 3

7370 C 2
7370 A 2

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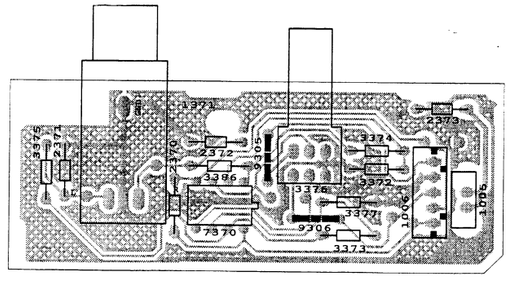

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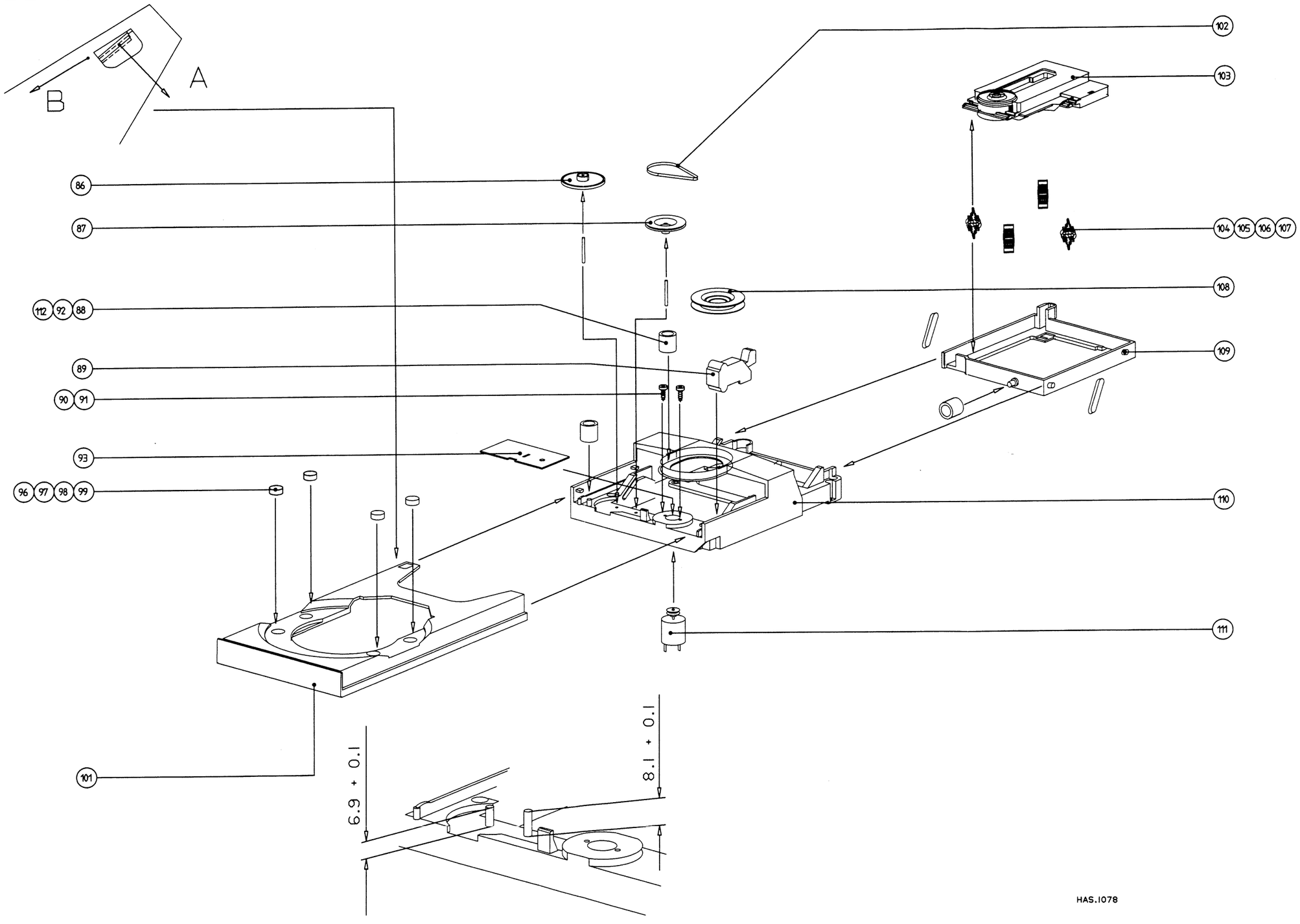
**LOADER**

DETAIL I




HAS.1078

**PARTSLIST LOADER**

| | | |
|---|---|---|
| 86 | 4822 528 81464 | DRIVE PINION |
| 87 | 4822 528 81465 | PULLEY |
| 88,92,112 | 4822 325 60379 | DAMPING GROMMET |
| 89 | 4822 276 13222 | SWITCH |
| 93 | 4822 444 60816 | COVER PLATE |
| 96,97,98,99 | 4822 325 80511 | ORNAMENTAL TULE |
| 101 | 4822 444 50679 | SLIDE |
| 102 | 4822 358 31168 | BELT |
| 103 | 4822 691 30278 | CDM12.1 MECHANISM |
| 104,105,106,107 | 4822 325 50215 | SUSPENSION |
| 108 | 4822 402 61412 | CLAMPER ASSY |
| 109 | 4822 464 50895 | SUBCHASSIS |
| 110 | 4822 464 50678 | CHASSIS |
| 111 | 4822 361 21492 | MOTOR |

**Screws**

| | |
|---|---|
| 90,91 | selftapping screw 2,2 x 4 |

## MECHANICAL PARTS LIST

| | | | |
|---|---|---|---|
| 1 | | 4822 444 40817 | FRONT CD36 |
| 1 | | 4822 444 40816 | FRONT CD46 |
| 8 | | 4822 410 63683 | KNOBUNIT |
| 9 | | 4822 402 61557 | POWER ROD |
| 14 | | 4822 454 12948 | WORDMARK |
| 15 | | 4822 450 62406 | WINDOW |
| 53 | | 4822 410 61467 | VOLUME KNOB |
| 65 | | 4822 444 50738 | TRAY FRONT |
| 151 | | 4822 444 60976 | COVER CD36 |
| 151 | | 4822 444 61045 | COVER CD46 |
| 251,252,253,254 | | 4822 462 42081 | FOOT CD36 |
| 251,252,253,254 | | 4822 462 42163 | FOOT GOLD CD46 |
| 255,256,257,258 | | 4822 462 40683 | TABLE PROTECTOR |
| 283,284 | ⚠ | 4822 532 60948 | BUSHING |
| 306 | ⚠ | 4822 265 10092 | ADAPTER (/01B) |
| 308 | | 4822 321 62381 | CINCH CABLE CD36 |
| 308 | | 4822 321 22832 | CINCH CABLE CD46 |
| 365 | | 4822 218 10538 | REM.CONTROL RD6843 |

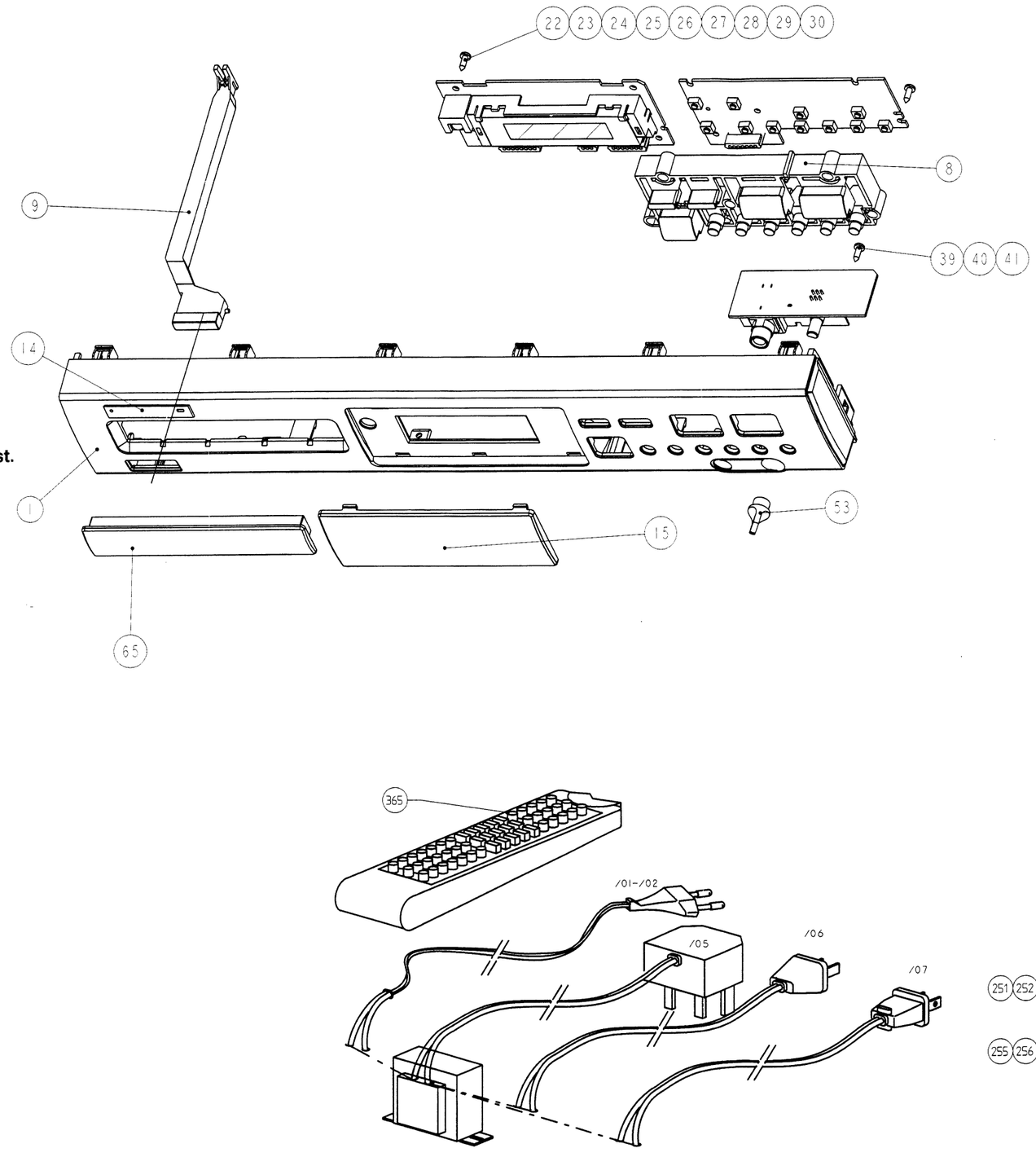
**Not mentioned parts are only available during production period on special request.**

### Screws

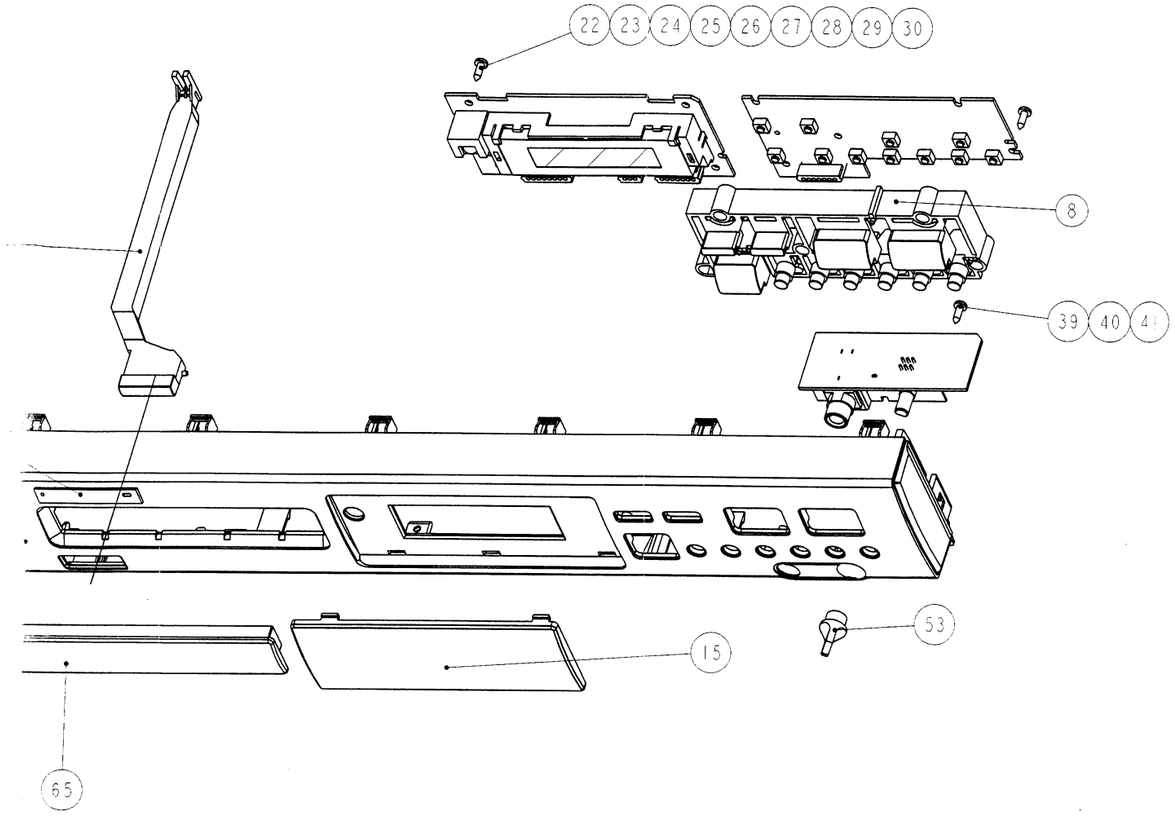
| | |
|---|---|
| Selftapping screw for plastic 3x8: | 200, 201, 202, 222 |
| Selftapping screw for plastic 3x10: | 39, 40, 41 |
| Selftapping screw for plastic 3x12: | 22, 23, 24, 25, 26, 27, 28, 29, 30 |
| Selftapping screw for metal M3x6: | 75, 76<br>171, 172, 173, 174<br>175, 176, 177<br>205, 210, 220, 221<br>291, 292 |
| Selftapping screw for metal M3x10: | 203, 211 |

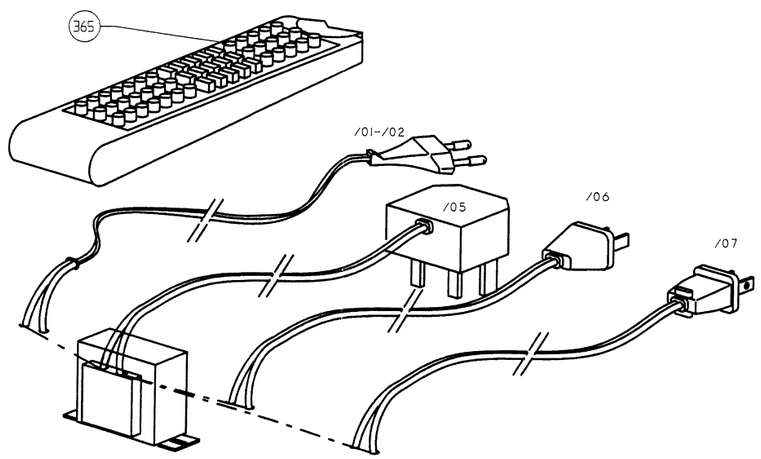


## EXPLODED VIEW



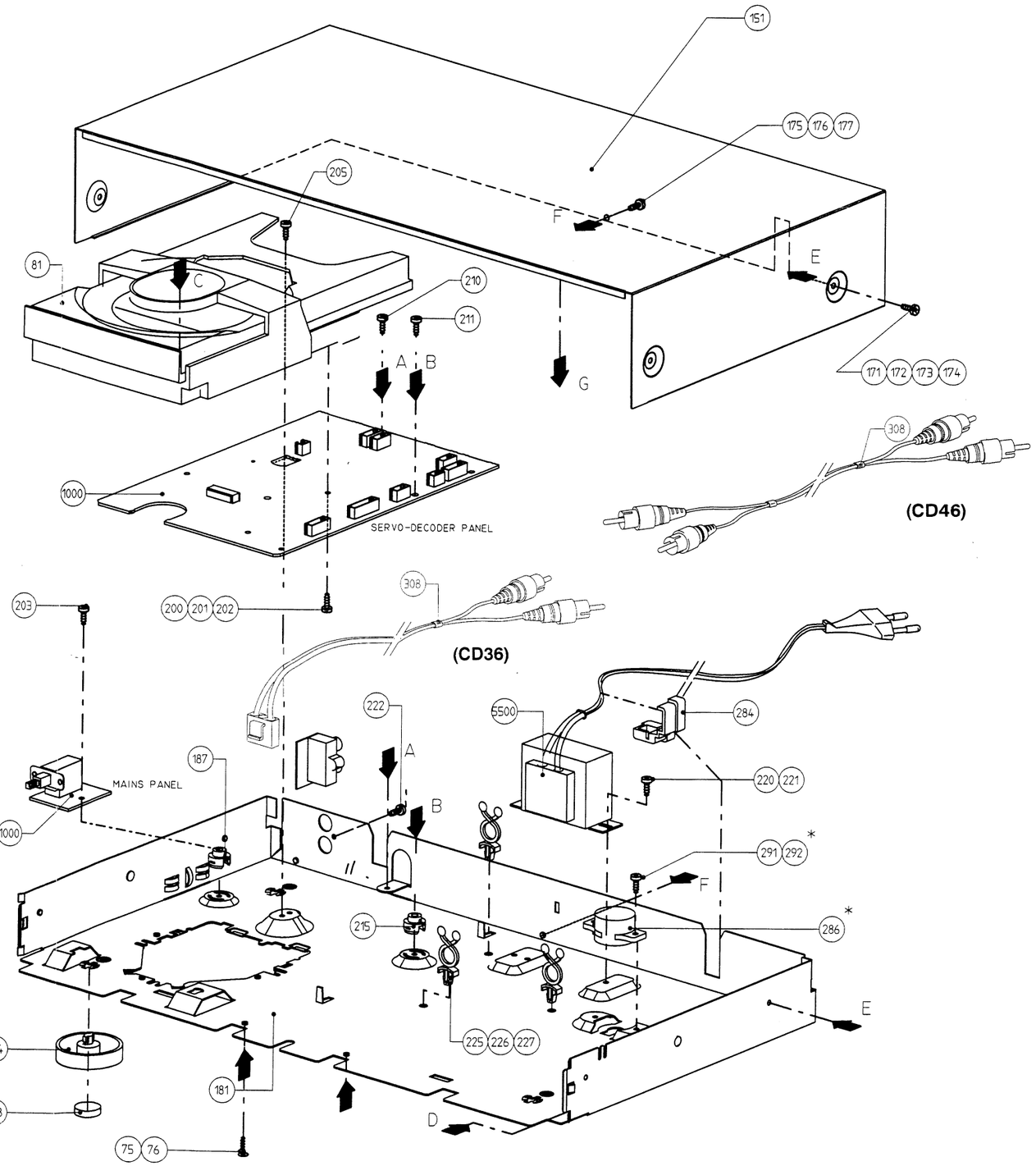
## EXPLODED VIEW




* ONLY /01-VERSION





## ELECTRICAL PARTS LIST

### MISCELLANEOUS

| | | |
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| | 4822 256 92151 | DISPLAY HOLDER |
| 1000 | 4822 242 73557 | RESONATOR 8.46MHz |
| 1020 | 4822 276 13114 | TACT SWITCH |
| 1021 | 4822 276 13114 | TACT SWITCH |
| 1022 | 4822 276 13114 | TACT SWITCH |
| 1023 | 4822 276 13114 | TACT SWITCH |
| 1024 | 4822 276 13114 | TACT SWITCH |
| 1025 | 4822 276 13114 | TACT SWITCH |
| 1026 | 4822 276 13114 | TACT SWITCH |
| 1027 | 4822 276 13114 | TACT SWITCH |
| 1028 | 4822 276 13114 | TACT SWITCH |
| 1029 | 4822 276 13114 | TACT SWITCH |
| 1030 | 4822 276 13114 | TACT SWITCH |
| 1040 | 4822 214 52009 | IR RECEIVER GP1U58XP |
| 1050 | 5322 242 73686 | RESONATOR 12MHz |
| 1101 | 4822 242 81865 | RESONATOR 16.93MHz |
| 1303 | 4822 267 31731 | ANALOG OUT SOCKET |
| 1371 | 4822 267 31453 | HEADPHONE SOCKET |
| 1450 | 4822 130 91329 | DISPLAY 8-BT-153GK |
| 1502 | 4822 242 72527 | RESONATOR 4MHz |
| 1510 ⚠ | 4822 071 51002 | FUSE RADIAL T 1A |
| 1511 ⚠ | 4822 071 51002 | FUSE RADIAL T 1A |
| 1530 ⚠ | 4822 276 13489 | MAINS SWITCH |

### CAPACITORS

| | | |
|---|---|---|
| 2000 | 4822 122 10466 | 220pF 10% 50V |
| 2001 | 4822 122 10466 | 220pF 10% 50V |
| 2002 | 4822 122 10466 | 220pF 10% 50V |
| 2003 | 4822 122 10466 | 220pF 10% 50V |
| 2004 | 4822 122 10466 | 220pF 10% 50V |
| 2005 | 4822 122 10466 | 220pF 10% 50V |
| 2006 | 4822 126 12878 | 1,5nF 10% 16V |
| 2007 | 4822 122 10459 | 560pF 10% 50V |
| 2008 | 5322 124 21643 | 22µF 20% 40V |
| 2009 | 4822 126 11585 | 22nF +80-20% 25V |
| 2010 | 4822 126 11585 | 22nF +80-20% 25V |
| 2011 | 5322 124 21643 | 22µF 20% 40V |
| 2012 | 4822 126 11585 | 22nF +80-20% 25V |
| 2013 | 5322 124 21643 | 22µF 20% 40V |
| 2014 | 4822 126 12785 | 47nF TUB 50V |
| 2025 | 5322 124 21643 | 22µF 20% 40V |
| 2040 | 4822 126 10053 | 180pF 10%Y5P |
| 2041 | 4822 126 10053 | 180pF 10%Y5P |
| 2042 | 4822 126 12787 | 330pF 10% 50V |
| 2043 | 4822 122 33848 | 47pF 5%SL 50V |
| 2044 | 4822 122 33848 | 47pF 5%SL 50V |
| 2045 | 4822 122 33195 | 100pF 10% 50V |
| 2046 | 4822 126 12573 | 18pF 5% 50V |
| 2047 | 5322 124 21643 | 22µF 20% 40V |
| 2048 | 4822 126 12787 | 330pF 10% 50V |
| 2049 | 4822 126 10053 | 180pF 10%Y5P |
| 2050 | 4822 122 10466 | 220pF 10% 50V |
| 2051 | 4822 126 11585 | 22nF +80-20% 25V |
| 2052 | 5322 124 21643 | 22µF 20% 40V |
| 2060 | 4822 126 12882 | 100nF +80-20% 50V |
| 2062 | 4822 126 12882 | 100nF +80-20% 50V |
| 2063 | 5322 121 42489 | 33nF 5% 250V |
| 2064 | 4822 126 12882 | 100nF +80-20% 50V |
| 2066 | 4822 126 12339 | 2,2nF 10% Y5Ω |
| 2067 | 4822 126 12882 | 100nF +80-20% 50V |
| 2068 | 4822 126 12148 | 2,7nF 10% |
| 2069 | 4822 126 10053 | 180pF 10%Y5P |
| 2071 | 4822 126 12882 | 100nF +80-20% 50V |
| 2072 | 4822 126 12882 | 100nF +80-20% 50V |
| 2074 | 4822 126 12882 | 100nF +80-20% 50V |
| 2075 | 4822 126 13151 | 3,9nF 10% Y5Ω 16V |
| 2076 | 4822 126 10053 | 180pF 10%Y5P |
| 2100 | 4822 126 12339 | 2,2nF 10% Y5Ω |
| 2101 | 4822 122 33848 | 47pF 5%SL 50V |
| 2102 | 4822 126 11585 | 22nF +80-20% 25V |
| 2103 | 5322 121 42386 | 100nF 5% 63V |
| 2105 | 4822 122 33195 | 100pF 10% 50V |
| 2110 | 5322 124 21643 | 22µF 20% 40V |
| 2111 | 4822 126 12882 | 100nF +80-20% 50V |
| 2113 | 4822 122 33191 | 22pF 5% 50V |
| 2115 | 4822 126 11585 | 22nF +80-20% 25V |
| 2116 | 5322 124 21643 | 22µF 20% 40V |
| 2140 | 4822 126 12785 | 47nF TUB 50V |
| 2141 | 4822 126 12882 | 100nF +80-20% 50V |
| 2142 | 4822 122 33848 | 47pF 5%SL 50V |
| 2280 | 4822 124 40433 | 47µF 20% 25V |
| 2281 | 4822 126 12882 | 100nF +80-20% 50V |
| 2300 | 4822 124 40433 | 47µF 20% 25V |
| 2301 | 4822 124 40433 | 47µF 20% 25V |
| 2302 | 4822 126 11585 | 22nF +80-20% 25V |
| 2303 | 4822 124 40433 | 47µF 20% 25V |
| 2304 | 4822 122 10466 | 220pF 10% 50V |
| 2305 | 4822 122 33849 | 150pF 10%Y5P 50V |
| 2306 | 4822 124 40246 | 4,7µF 20% 63V |
| 2307 | 4822 122 10466 | 220pF 10% 50V |
| 2308 | 4822 122 33849 | 150pF 10%Y5P 50V |
| 2309 | 4822 124 40246 | 4,7µF 20% 63V |
| 2310 | 4822 126 12882 | 100nF +80-20% 50V |
| 2370 | 4822 126 11585 | 22nF +80-20% 25V |
| 2371 | 4822 122 33197 | 1nF 10% 50V |
| 2372 | 4822 122 33197 | 1nF 10% 50V |
| 2373 | 4822 126 11585 | 22nF +80-20% 25V |
| 2374 | 4822 126 12882 | 100nF +80-20% 50V |
| 2400 | 5322 124 21643 | 22µF 20% 40V |
| 2401 | 4822 126 11585 | 22nF +80-20% 25V |
| 2505 | 4822 122 33197 | 1nF 10% 50V |
| 2506 | 4822 126 12882 | 100nF +80-20% 50V |

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| | | |
|---|---|---|
| 2514 | 4822 122 33197 | 1nF 10% 50V |
| 2533 | 4822 126 11585 | 22nF +80-20% 25V |
| 2534 | 4822 126 11585 | 22nF +80-20% 25V |
| 2535 | 4822 126 12882 | 100nF +80-20% 50V |
| 2536 | 4822 124 80294 | 3300µF 20% 16V |
| 2537 | 4822 126 11585 | 22nF +80-20% 25V |
| 2538 | 4822 124 80148 | 2200µF 20% 16V |
| 2539 | 4822 126 11585 | 22nF +80-20% 25V |
| 2540 | 5322 124 22094 | 220µF 20% 50V |
| 2541 | 4822 126 12882 | 100nF +80-20% 50V |
| 2542 | 4822 124 40184 | 1000µF 20% 10V |
| 2560 | 4822 124 40849 | 330µF 20% 16V |
| 2600 | 4822 126 12882 | 100nF +80-20% 50V |
| 2601 | 4822 126 11585 | 22nF +80-20% 25V |
| 2602 | 4822 126 11585 | 22nF +80-20% 25V |
| 2701 | 4822 126 11585 | 22nF +80-20% 25V |
| 2703 | 4822 126 11585 | 22nF +80-20% 25V |

### RESISTORS

| | | |
|---|---|---|
| 3000 | 4822 116 83864 | 10k 5% 0,5W |
| 3001 | 4822 116 83864 | 10k 5% 0,5W |
| 3002 | 4822 116 83864 | 10k 5% 0,5W |
| 3003 | 4822 116 83864 | 10k 5% 0,5W |
| 3004 | 4822 116 83864 | 10k 5% 0,5W |
| 3005 | 4822 116 83864 | 10k 5% 0,5W |
| 3006 | 4822 050 11002 | 1k 1% 0,4W |
| 3007 | 4822 050 11002 | 1k 1% 0,4W |
| 3010 | 4822 116 52235 | 1M 5% 0,5W |
| 3011 | 4822 116 83864 | 10k 5% 0,5W |
| 3012 | 4822 116 52219 | 330Ω 5% 0,5W |
| 3013 | 4822 050 11002 | 1k 1% 0,4W |
| 3014 | 4822 116 83864 | 10k 5% 0,5W |
| 3015 | 4822 116 52219 | 330Ω 5% 0,5W |
| 3020 | 4822 050 11002 | 1k 1% 0,4W |
| 3021 | 4822 116 83864 | 10k 5% 0,5W |
| 3022 ⚠ | 4822 052 10478 | 4Ω7 5% 0,33W |
| 3040 | 4822 116 52239 | 120k 5% 0,5W |
| 3041 | 4822 116 52239 | 120k 5% 0,5W |
| 3042 | 4822 116 52291 | 56k 5% 0,5W |
| 3043 | 4822 050 11002 | 1k 1% 0,4W |
| 3044 | 4822 116 52222 | 390Ω 5% 0,5W |
| 3045 | 4822 116 52175 | 100Ω 5% 0,5W |
| 3046 | 4822 116 52249 | 1k8 5% 0,5W |
| 3047 | 4822 116 52276 | 3k9 5% 0,5W |
| 3048 | 4822 116 52175 | 100Ω 5% 0,5W |
| 3049 | 4822 116 52249 | 1k8 5% 0,5W |
| 3050 | 4822 116 52223 | 430Ω 5% 0,5W |
| 3051 | 4822 116 52223 | 430Ω 5% 0,5W |
| 3052 | 4822 050 11002 | 1k 1% 0,4W |
| 3053 | 4822 116 52267 | 30k 5% 0,5W |
| 3054 | 4822 116 52272 | 330k 5% 0,5W |
| 3055 | 4822 116 52175 | 100Ω 5% 0,5W |
| 3056 | 4822 050 11002 | 1k 1% 0,4W |
| 3057 | 4822 116 52277 | 39k 5% 0,5W |
| 3058 | 4822 116 52175 | 100Ω 5% 0,5W |
| 3059 | 4822 116 52284 | 47k 5% 0,5W |
| 3060 | 4822 116 83864 | 10k 5% 0,5W |
| 3062 ⚠ | 4822 052 10229 | 22Ω 5% 0,33W |
| 3064 | 4822 116 52296 | 6k8 5% 0,5W |
| 3065 | 4822 050 27502 | 7k5 1% 0,6W |
| 3066 | 4822 050 21503 | 15k 1% 0,6W |
| 3067 | 4822 116 52244 | 15k 5% 0,5W |
| 3068 ⚠ | 4822 052 10229 | 22Ω 5% 0,33W |
| 3069 | 4822 116 83864 | 10k 5% 0,5W |
| 3070 | 4822 116 52244 | 15k 5% 0,5W |
| 3071 | 4822 116 52296 | 6k8 5% 0,5W |
| 3072 | 4822 116 83864 | 10k 5% 0,5W |
| 3073 | 4822 116 52244 | 15k 5% 0,5W |
| 3074 ⚠ | 4822 052 10229 | 22Ω 5% 0,33W |
| 3075 | 4822 116 83864 | 10k 5% 0,5W |
| 3076 | 4822 116 52283 | 4k7 5% 0,5W |
| 3077 | 4822 116 52296 | 6k8 5% 0,5W |
| 3078 | 4822 116 52244 | 15k 5% 0,5W |
| 3079 | 4822 116 52244 | 15k 5% 0,5W |
| 3100 | 4822 116 52256 | 2k2 5% 0,5W |
| 3101 | 4822 116 52257 | 22k 5% 0,5W |
| 3107 | 4822 116 52219 | 330Ω 5% 0,5W |
| 3108 | 4822 116 52215 | 220Ω 5% 0,5W |
| 3109 | 4822 116 52215 | 220Ω 5% 0,5W |
| 3110 | 4822 116 52215 | 220Ω 5% 0,5W |
| 3111 | 4822 116 52215 | 220Ω 5% 0,5W |
| 3113 ⚠ | 4822 052 10338 | 3Ω3 5% 0,33W |
| 3114 | 4822 116 52235 | 1M 5% 0,5W |
| 3115 ⚠ | 4822 052 10338 | 3Ω3 5% 0,33W |
| 3117 | 4822 116 52289 | 5k6 5% 0,5W |
| 3140 | 4822 116 52271 | 33k 5% 0,5W |
| 3141 | 4822 116 52271 | 33k 5% 0,5W |
| 3142 | 4822 116 52271 | 33k 5% 0,5W |
| 3143 | 4822 116 52234 | 100k 5% 0,5W |
| 3144 | 4822 116 52234 | 100k 5% 0,5W |
| 3145 ⚠ | 4822 052 10229 | 22Ω 5% 0,33W |
| 3146 | 4822 116 52175 | 100Ω 5% 0,5W |
| 3147 | 4822 116 52283 | 4k7 5% 0,5W |
| 3280 ⚠ | 4822 052 10338 | 3Ω3 5% 0,33W |
| 3300 | 4822 116 52251 | 18k 5% 0,5W |
| 3301 | 4822 116 52244 | 15k 5% 0,5W |
| 3302 ⚠ | 4822 052 10108 | 1Ω 5% 0,33W |
| 3303 ⚠ | 4822 052 10108 | 1Ω 5% 0,33W |
| 3304 | 4822 116 52276 | 3k9 5% 0,5W |
| 3305 | 4822 116 52276 | 3k9 5% 0,5W |
| 3306 | 4822 116 52257 | 22k 5% 0,5W |
| 3307 | 4822 116 52257 | 22k 5% 0,5W |
| 3360 | 4822 050 11002 | 1k 1% 0,4W |
| 3361 | 4822 116 52256 | 2k2 5% 0,5W |

| | | | |
|---|---|---|---|
| 3362 | | 4822 116 52256 | 2k2 5% 0,5W |
| 3363 | | 4822 050 11002 | 1k 1% 0,4W |
| 3364 | | 4822 050 11002 | 1k 1% 0,4W |
| 3365 | | 4822 116 52256 | 2k2 5% 0,5W |
| 3366 | | 4822 050 11002 | 1k 1% 0,4W |
| 3367 | | 4822 116 52256 | 2k2 5% 0,5W |
| 3368 | | 4822 116 83874 | 220k 5% 0,5W |
| 3369 | | 4822 116 83874 | 220k 5% 0,5W |
| 3370 | | 4822 116 52284 | 47k 5% 0,5W |
| 3371 | | 4822 116 52284 | 47k 5% 0,5W |
| 3372 | | 4822 116 83864 | 10k 5% 0,5W |
| 3373 | | 4822 116 52244 | 15k 5% 0,5W |
| 3374 | | 4822 116 52244 | 15k 5% 0,5W |
| 3375 | | 4822 116 52206 | 120Ω 5% 0,5W |
| 3376 | | 4822 101 21199 | 10kX2 20% 0,025W |
| 3377 | | 4822 116 83864 | 10k 5% 0,5W |
| 3386 | | 4822 116 52206 | 120Ω 5% 0,5W |
| 3400 | | 4822 116 52284 | 47k 5% 0,5W |
| 3401 | | 4822 116 52257 | 22k 5% 0,5W |
| 3402 | | 4822 116 52257 | 22k 5% 0,5W |
| 3403 | | 4822 116 52257 | 22k 5% 0,5W |
| 3404 | | 4822 116 52257 | 22k 5% 0,5W |
| 3408 | | 4822 116 52269 | 3k3 5% 0,5W |
| 3409 | | 4822 116 52257 | 22k 5% 0,5W |
| 3410 | | 4822 116 52257 | 22k 5% 0,5W |
| 3411 | | 4822 116 83874 | 220k 5% 0,5W |
| 3500 | | 4822 116 52211 | 150Ω 5% 0,5W |
| 3501 | | 4822 050 11002 | 1k 1% 0,4W |
| 3502 | | 4822 116 52257 | 22k 5% 0,5W |
| 3503 | | 4822 116 52257 | 22k 5% 0,5W |
| 3540 | | 4822 116 52284 | 47k 5% 0,5W |
| 3541 | | 4822 116 52231 | 820Ω 5% 0,5W |
| 3542 | | 4822 116 52263 | 2k7 5% 0,5W |
| 3543 | | 4822 116 52283 | 4k7 5% 0,5W |
| 3544 | | 4822 116 52257 | 22k 5% 0,5W |
| 3545 | ⚠ | 4822 052 10478 | 4Ω7 5% 0,33W |
| 3560 | | 4822 050 11002 | 1k 1% 0,4W |
| 3562 | | 4822 116 52283 | 4k7 5% 0,5W |
| 3563 | | 4822 116 52283 | 4k7 5% 0,5W |
| 3601 | | 4822 116 52238 | 12k 5% 0,5W |
| 3602 | | 4822 116 52238 | 12k 5% 0,5W |
| 3603 | ⚠ | 4822 052 10229 | 22Ω 5% 0,33W |
| 3604 | | 4822 116 52303 | 8k2 5% 0,5W |
| 3606 | | 4822 116 52238 | 12k 5% 0,5W |
| 3607 | | 4822 116 52238 | 12k 5% 0,5W |
| 3700 | | 4822 116 83874 | 220k 5% 0,5W |
| 3701 | | 4822 116 52257 | 22k 5% 0,5W |
| 3703 | | 4822 116 52257 | 22k 5% 0,5W |
| 3706 | | 4822 116 52257 | 22k 5% 0,5W |
| 3709 | | 4822 116 52257 | 22k 5% 0,5W |
| 3710 | | 4822 116 52257 | 22k 5% 0,5W |
| 3712 | | 4822 116 52257 | 22k 5% 0,5W |
| 3713 | | 4822 116 52257 | 22k 5% 0,5W |
| 3715 | | 4822 116 83864 | 10k 5% 0,5W |
| 3716 | | 4822 050 11002 | 1k 1% 0,4W |
| 3717 | | 4822 050 11002 | 1k 1% 0,4W |
| 3718 | | 4822 050 11002 | 1k 1% 0,4W |
| 3719 | | 4822 050 11002 | 1k 1% 0,4W |
| 3720 | | 4822 050 11002 | 1k 1% 0,4W |
| 3723 | | 4822 116 52257 | 22k 5% 0,5W |
| 3725 | | 4822 050 11002 | 1k 1% 0,4W |
| 3726 | | 4822 050 11002 | 1k 1% 0,4W |
| 3727 | | 4822 050 11002 | 1k 1% 0,4W |

## COILS

| | | |
|---|---|---|
| 5010 | 4822 157 62552 | 2,2µH |
| 5300 | 4822 157 71086 | 4,7µH |
| 5301 | 4822 157 71086 | 4,7µH |